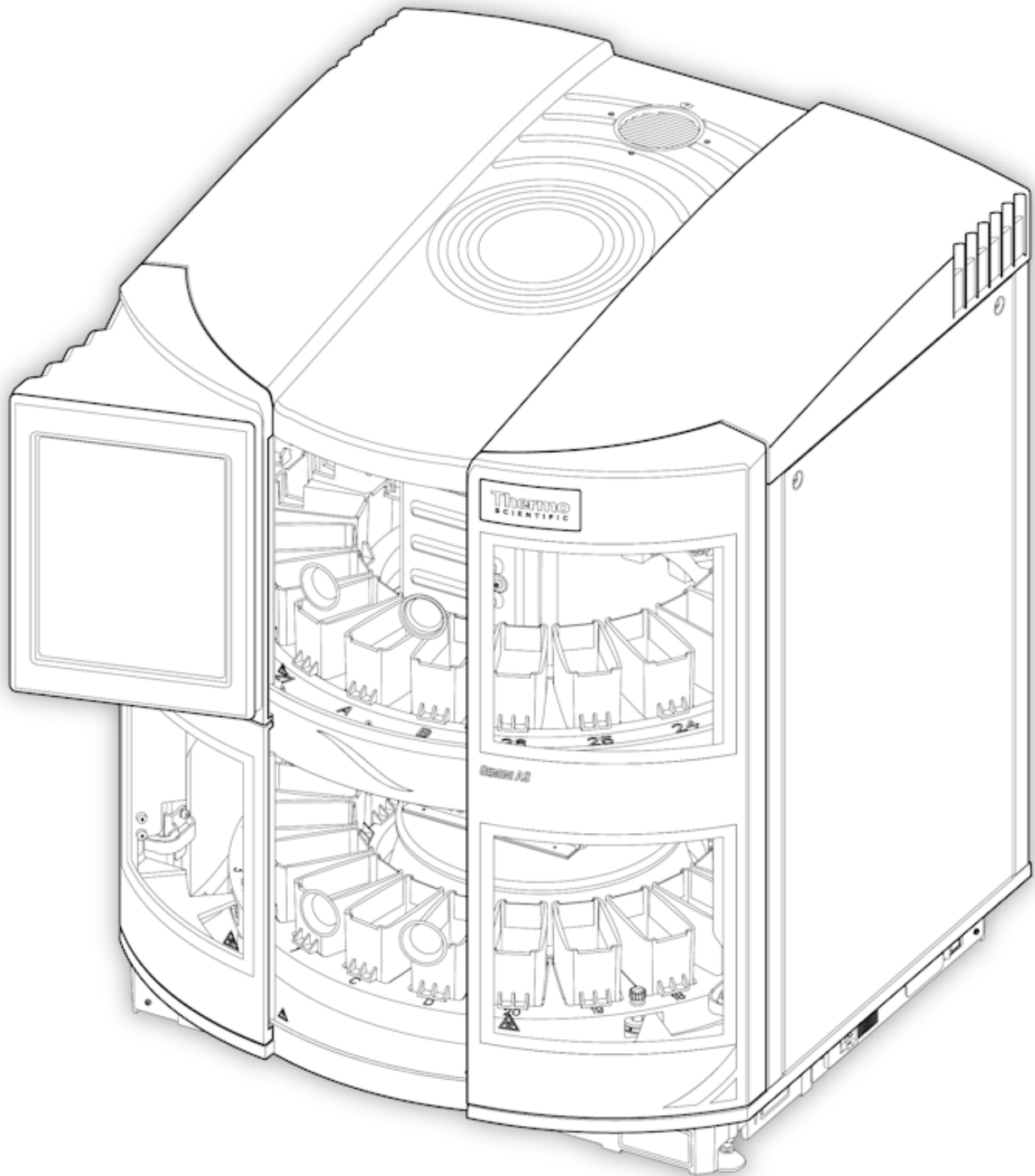


Thermo Scientific
Gemini AS
Operator Guide
A81510100 Issue 1, Version 0.1.6



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Standards

The Thermo Scientific Gemini AS meets the following CE Mark requirements:

In Vitro Diagnostic Directive 98/79/EC

Machinery Directive 2006/42/EC

EMC Statement

This IVD equipment complies with the emissions and immunity requirements of IEC 61326-2-6:2006.

It has been designed and tested to CISPR 11 Class A. In a domestic environment it may cause radio interference, in which case it may be necessary to take measures to mitigate the interference.

The electromagnetic environment should be evaluated prior to operation of the instrument.

Do not use this instrument in close proximity to sources of strong electromagnetic radiation (e.g. unshielded International RF sources) as these may interfere with the proper operation.

Symbols

The following symbols and conventions may be used throughout this document and on the instrument:



This symbol is used on the equipment, or in a document, to indicate that instructions must be followed for safe and correct operation. If this symbol appears on the instrument, always refer to the Operator Guide.



This symbol is used on the equipment, or in a document, to indicate that there may be a biohazard associated with the instrument. Always act with common sense and be aware of the samples used. Take suitable precautions.



This symbol indicates that a surface is hot. If this symbol appears on the instrument, always refer to the Operator Guide. Take suitable precautions.



This symbol is used on the equipment, or in a document, to indicate that harmful chemicals are used. Refer to the Material Safety Data Sheets for the chemicals used. Always act with common sense and be aware of local laboratory procedures. Take suitable precautions.

A WARNING IS GIVEN IN THE DOCUMENTATION IF THERE IS A DANGER OF PERSONAL INJURY OR DAMAGE TO THE EQUIPMENT OR SAMPLES.

Note

Notes give additional information about a job or instruction, but do not form part of the instruction.

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Safety Information

Introduction

Thermo Fisher Scientific products are designed for convenient and reliable service; however, incorrect actions by a user may damage the equipment, or cause a hazard to health.

The following sections contain important information for the safe setup and use of the instrument.



All users must read and understand the following sections before using the instrument.

General Safety

This instrument, as supplied, conforms with IEC61010-1 and IEC61010-2-101; however, the addition of chemicals introduces potential hazards.

As with all scientific equipment, due care and good laboratory practice must be employed when dealing with these chemicals, and consideration must be given to the potential for hazard when dealing with particular chemicals.

Be aware that many of the reagents used with this instrument may be flammable. Do not introduce any source of ignition into, or near, the instrument once it has been loaded with reagents.

Do not remove any panels or covers. The instrument does not have any user serviceable parts inside the instrument.

The instrument must be properly connected to a good earth (ground) via the Mains input supply.

Position the instrument such that it is possible to interrupt the Mains supply at the source by removing the plug from the socket.

If the equipment is used in a manner not specified by Thermo Fisher Scientific, the protection offered by the equipment may be impaired.

Make sure that there is at least 100 mm (4 in) clearance around any fan inlets on the instrument.

In compliance with statutory requirements all our equipment is designed to accepted standards of safety. Its use does not entail any hazard if operated in accordance with the instructions given in the documentation. However, the following safety precautions must be obeyed:

- All users must have read and understood the Operator Guide and these safety instructions; and only operate the unit in accordance with the instructions.
- Potentially lethal voltages above 110V a.c. or 50V d.c. are present inside the instrument. Do not remove any access covers unless specifically instructed to do so.
- It is important that normal standards of safety and good laboratory practices are employed. Always use common sense when operating the instrument.
- Any problems and queries should be referred to your Thermo Fisher Scientific supplier.
- Correct maintenance procedures are essential for consistent performance. It is recommended that a Maintenance Contract is taken with our Service Department.
- Use only factory approved accessories or replacement parts with this instrument.
- Only use reagents recommended in the Operator Guide.

Disposal of Sealed Lead Acid Batteries

The sealed lead acid batteries within the instrument need to be replaced every three years.

If the instrument has mainly been operated in very low temperatures, or has been exposed to frequent Mains failures, the batteries should be replaced every year.

The battery manufacturers advise their customers to comply with the relevant regulations within their particular country regarding disposal of this type of battery.

The battery used within this instrument is:

12 V, 12Ah, valve regulated, sealed, lead acid type, rechargeable battery.

This battery is classified as "Class 8 & Group III UN No. 2800 Batteries, wet, non-spillable, electric storage, special provision A67", and meets all requirements of the International Air Transport Association (I.A.T.A) Dangerous Goods Regulations.

Chemical Safety

The introduction of chemicals creates potential hazards and Thermo Fisher Scientific has adopted the following position with regard to the subject of volatile chemicals used in medical laboratories:

- Non-specified chemicals are used in the instrument at the customers own risk.
- All the chemicals recommended by Thermo Fisher Scientific have auto-ignition temperatures considerably above any surface temperature that can be reached during a single fault failure on the instrument. Small quantities of paraffin wax present will not reach a temperature that will produce flammable vapour.
- The instrument contains no source of ignition in any areas of the instrument where chemicals are stored, or are likely to leak into in a single fault condition.
- The operator is fully aware of the contents of the specification documents detailing the properties of the chemicals they are using.
- The operator has carried out any legally required assessment of chemicals used and is using good laboratory practice.



Some chemicals which may be used during operation are flammable - do not use sources of ignition in the vicinity of the instrument when it is loaded with reagents.



Harmful chemical vapours such as xylene and toluene may be emitted during the normal operation of some instruments, and the operator should be aware of suitable precautions and safety measures.

Environment

This product is required to comply with the European Union's Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC. It is marked with the following symbol:



Thermo Fisher Scientific has contracted with one or more recycling / disposal companies in each EU Member State, and this product should be disposed of or recycled through them.

Further information on Thermo Fisher Scientific 's compliance with these Directives, the recyclers in your country, and information on Thermo Fisher Scientific products which may assist the detection of substances subject to the RoHS Directive are available at:

www.thermo.com/WEEERoHS

Warranty Statement

We at Thermo Fisher Scientific are proud of our quality, reliability and of our after-sales service. We continuously strive to improve our service to our customers.

Please ask your distributor or Thermo Fisher Scientific representative about Service Contracts which can keep your purchase in peak condition for many years to come.

Warranty provisions necessarily vary to comply with differences in national and regional legislation. Specific details can be found in the delivery documentation or from your dealer or representative.

Please note that your warranty may be invalidated if:

- This instrument is modified in any way.
- Accessories and reagents which have not been approved by Thermo Fisher Scientific are used.
- The instrument is not operated or maintained in accordance with the instructions in the Operator Guide.

Product Return Safety Declaration



PRODUCT RETURN SAFETY DECLARATION

<p>Part 1 Decontamination Certificate</p> <p>Any instrument or part of any instrument must be clean before being returned, and where necessary accompanied by a completed Decontamination Certificate. Should the instrument or any part of it be received in an unclean condition, or Thermo Fisher Scientific consider it to be a hazard, the instrument or part will be returned unrepaired at the expense of the customer.</p> <p>It is important that the certificate is forwarded by post or fax, and a copy attached to the exterior of the container. Containers will not be opened until the company is in possession of the required certificate.</p> <p>This form MUST be completed by the customer and NOT by a Thermo Fisher or distributor employee.</p> <p>If an instrument or part is to be returned to Thermo Fisher Scientific, please note the following:</p> <ol style="list-style-type: none"> 1 If the instrument or any part of it has been exposed to, or been in contact with potential pathogenic or radioactive material, it is essential that it is decontaminated. 2 Set procedures are laid down in the European Health and Safety Directives for decontamination. To avoid any misunderstanding, we request that all instruments or parts returned to us must be accompanied by a certificate stating the following: <p style="margin-left: 40px;">We certify that this (Model)..... Serial No.....</p> <ul style="list-style-type: none"> • has not been exposed to pathogenic, radioactive or other hazardous material and has been cleaned <p>OR</p> <ul style="list-style-type: none"> • has been decontaminated and cleaned (if exposed to the above) according to approved procedures following exposure to:
<ul style="list-style-type: none"> • Has the instrument been used for work with human or animal Transmissible Spongiform Encephalopathies, e.g. Creutzfeld-Jacob disease, Scrapie or BSE? YES / NO <p>If yes, please contact Thermo Fisher Service before taking any further action.</p>
<p>Signed Position</p> <p>Name (Block Capitals)</p> <p>Company or Organisation</p> <p>Full Address</p> <p>.....</p>
<p>Part 2 Guidelines for Returning Instruments</p> <p>Please use the checklist below to ensure that the instrument being returned is ready for collection.</p> <ul style="list-style-type: none"> • All reagents / wax removed from instrument, including vapour traps (if applicable)..... <input type="checkbox"/> • Accessories are secured / itemised <input type="checkbox"/> • Instrument has had transit clamps fitted as per Operator Guide (if applicable)..... <input type="checkbox"/> • Instrument is packed in original packaging..... YES / NO <p>RMA NUMBER</p> <p>CARRIER</p> <p>FOR ATTENTION OF</p>

How to Use This Guide

Introduction

Before operating the instrument, ensure that you have read and understood the [Safety Information](#) and the relevant sections in this Operator Guide.

Chapter Summary

This Operator Guide is structured to let you start processing quickly and safely with Gemini AS.

Chapter 1 - Introducing Gemini AS

This chapter gives a tour of the instrument and its features. It describes the different parts of the instrument and gives general information about using Gemini AS.

Chapter 2 - Installation and Setup

This chapter is a guide to installing and setting up Gemini AS.

Chapter 3 - Basic Operation

This chapter explains how to load and stain slides using Gemini AS on a day-to-day basis.

Chapter 4 - Advanced Operation

This chapter is intended for more advanced users and describes how to create staining protocols and protocol sets and maximise the efficiency of the instrument.

Chapter 5 - Cleaning and Maintenance

This chapter describes how to clean and maintain Gemini AS to ensure that staining is safe, efficient and reproducible.

Chapter 6 - Troubleshooting

This chapter is intended to help you identify and resolve common faults and issues.

Chapter 1 - Introducing Gemini AS

Welcome to the Gemini AS Operator Guide. This chapter introduces Gemini AS and provides an overview of the instrument.

Read this chapter to learn more about:

- The purpose, intended use and compatibility of Gemini AS.
- The component parts and specifications of the instrument.
- The user interface and how to get help while using the instrument.

Introduction to Gemini AS

The Gemini AS is a versatile bench-top slide stainer capable of staining large numbers of microscope slides easily and effectively. Designed for general laboratory use, Gemini AS can stain multiple racks (each holding up to 20 slides) using up to 26 reagent pots, 6 running water positions and 5 dry storage or optional heater positions (only available on heated units).

Standard microscope slides are loaded into the instrument in specially designed Gemini AS slide baskets. The instrument will also accommodate larger slides using a Gemini AS large slide basket adapter. If you are also using a Thermo Scientific ClearVue coverslipper, the unstained slides can be loaded into a basket that can be first run on the Gemini AS and then directly transferred to the ClearVue. When you start a staining protocol, Gemini AS automatically moves the slide baskets through the defined staining steps.

For more information and step-by-step instructions, refer to [Basic Operation](#). If you want to create and run your own staining protocols and learn how to maximise the efficiency and throughput of the instrument, refer to [Advanced Operation](#).

Intended Use

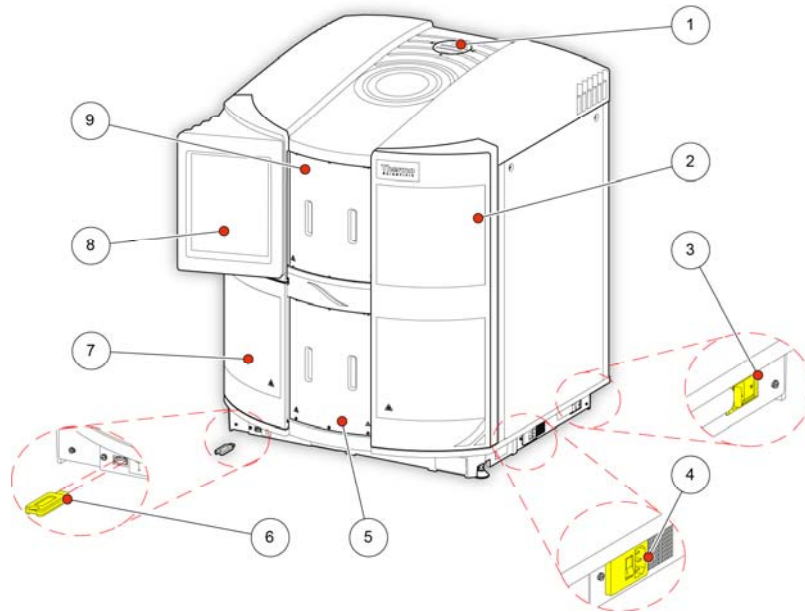
The Gemini AS is intended to be used as an automated slide stainer designed for use in histology and cytology laboratories to stain fixed tissue or cell samples on microscope slides, available for subsequent examination and diagnosis by a technologist or pathologist.

Pre-defined Protocols

The Gemini AS is supplied with pre-defined protocols which have been optimised for Thermo Scientific stains and reagents. By utilising these protocols in conjunction with the applicable Thermo Scientific consumables, the Gemini AS stainer can be operated in a manner which promotes efficiency and yields consistent and reproducible staining results. For more details and product information, please contact your Thermo Scientific Representative.

Identification of Parts

The following diagrams identify the different components of Gemini AS.

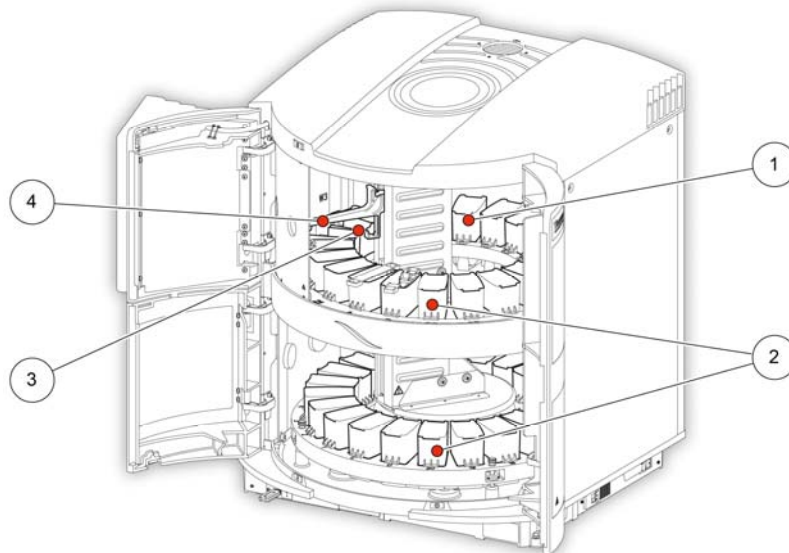


Gemini AS (outside view)

- 1 Air extraction outlet, 2 Main access door, 3 Battery isolation switch, 4 Mains power connector and switch, 5 Unload door, 6 USB port, 7 Main access door, 8 Touchscreen, 9 Load door.*



The USB port is for memory sticks only. Do not connect any other USB device to the Gemini AS.



Gemini AS (inside view)

- 1 Heater stations, 2 Reagent pots, 3 Pick-up arm, 4 Water wash stations.*

System Specifications

The specifications of the Gemini AS instrument are shown in the following tables:

Model and Part Number

Heated	A81500101
Non-Heated	A81500102

Physical Specification

Width	720 mm (28½ in)
Depth	790 mm (31 in)
Height	888 mm (35 in)
Weight	87 kg (192 lb)

Environmental Specification

<i>Warning - For Indoor Use Only</i>	
Water Supply Pressure	Minimum: 0.2 bar (3 psi), Maximum: 10.0 bar (145 psi) at 20°C (68°F), decreasing linearly to 8.0 bar (116 psi) at 40°C (104°F)
Temperature (Operation)	5°C to 40°C (41°F to 104°F)
Temperature (Transit/Storage)	-25°C to 55°C (-13°F to 131°F)
Humidity	80% maximum for temperatures <31°C (88°F) decreasing linearly to 50% maximum at 40°C (104°F)
Altitude	Up to 2000 m (6500 feet)
Pollution Degree	2
Over Voltage Category	II

Electrical Specification

Voltage	100–240 VAC (-)
Frequency	50 / 60 Hz
Power	300 VA

Fuses

Mains Input Fuse (x2)	T10A, 250 V
-----------------------	-------------

System Interfacing

Gemini AS Interface

Gemini AS incorporates a compact, efficient and highly informative operator interface showing:

- A diagrammatic representation of reagent pots to help you load the correct reagents into the instrument.
- The location of slide batches within the instrument in real time.
- The availability of load and unload locations.
- Context-sensitive on-screen help information.

Using the Touchscreen

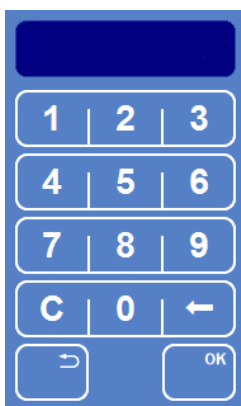
Gemini AS features a touchscreen user interface which is used to initiate staining, maintain protocols and protocol sets and define system preferences and settings. Simply press the button corresponding to the function that you want to use. For some tasks, for example confirming reagents are loaded, simply touch the icon corresponding to a reagent pot on the screen.

Note

Avoid using sharp or pointed objects to press buttons on the touchscreen. It is recommended that a clean finger is used to operate the touchscreen. However, if you require a stylus, the eraser-tipped end of a pencil (or similar) is suitable.

Number Pad

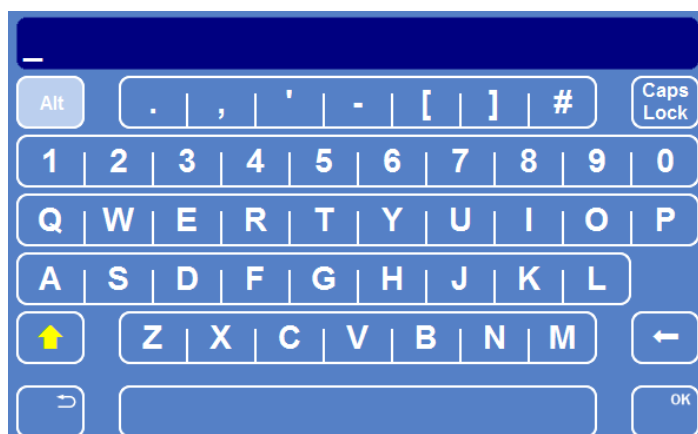
Entry of numerical values in Gemini AS is via a pop-up number pad. Use the number pad to enter access codes, set the volume of system alerts and define protocol step settings.



Pop-up number pad

Keyboard

An on-screen keyboard appears when you need to change the names of protocols, protocol sets and reagents. Simply press the appropriate keys on the keyboard as you would normally.

*On-screen keyboard*

Active Screen Types

The information bar at the bottom of each Gemini AS screen allows the System Administrator to quickly identify the type of screen which is currently active.

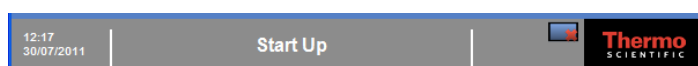
- A red information bar indicates that the instrument is in setup mode. Any changes to the information on the active screen may affect staining protocols or instrument operation.

*Red information bar*

- A grey information bar indicates that the instrument is in normal operating mode.

*Grey information bar*

The information area to the left of the Thermo Scientific logo displays the reagent filter icon, screen locked icon and software update icon, as appropriate.

*The information area showing the screen locked icon*

Menus, Options and Buttons

Back Button

Once you have completed a specific task, press the **Back** button to return to a previous screen.





*The Back button*

Note

Ensure that you save any changes by pressing the appropriate save button, if applicable, before returning to a previous screen.

Up and Down Buttons

When you are setting the system time and date you will be presented with a set of UP and DOWN arrow buttons. Press these buttons to set the required time or date.

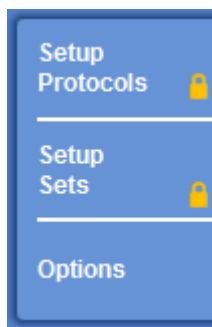
	Decreases the value in five 'unit' steps.
	Decreases the value in one 'unit' steps.
	Increases the value in one 'unit' steps.
	Increases the value in five 'unit' steps.

Selected Items

To help you identify selected items, the text is displayed in yellow rather than white. For example, when setting the system date, any adjustment that you make will apply to the item that you have selected (day, month or year). Similarly, when creating a copy of a staining protocol, the protocol that is selected (shown in yellow text) will be copied.

Locked Buttons

The System Administrator can enable access code protection which means that some system functions are locked until the correct four-digit code is entered. If access code protection has been enabled, you will see small padlock symbols on some of the buttons on the Options and Start Up screens.



Locked buttons; Options is not locked

You will need to enter the correct number before locked functions become available.

Getting Help

Gemini AS includes context-sensitive on-screen help to quickly answer any queries you may have about the operation and setup of the instrument. More detailed information is provided in this Operator Guide.

To display on-screen help from any screen, press the **i** icon which is displayed in the top right of each screen. To continue, press **OK** to close the help window.

Chapter 2 - Installation and Setup

This chapter contains all the necessary information required to unpack the instrument and prepare it for general use.

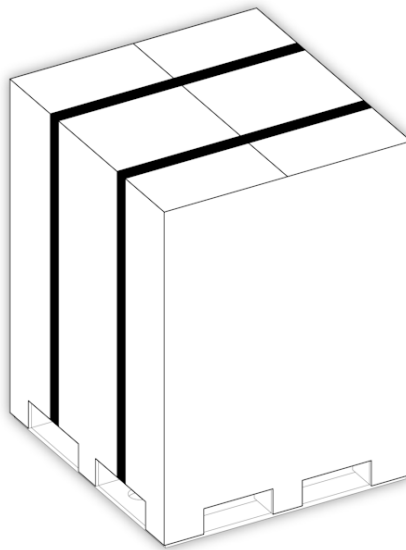
Read this chapter to learn how to:

- Unpack, move and position the instrument.
- Connect the instrument to a water supply.
- Fit the filter into the instrument.
- Adjust the turntable.
- Connect the instrument to mains power and switch on.
- Choose the display language and set the system time and date.
- Set audible system alerts and enable access code protection.

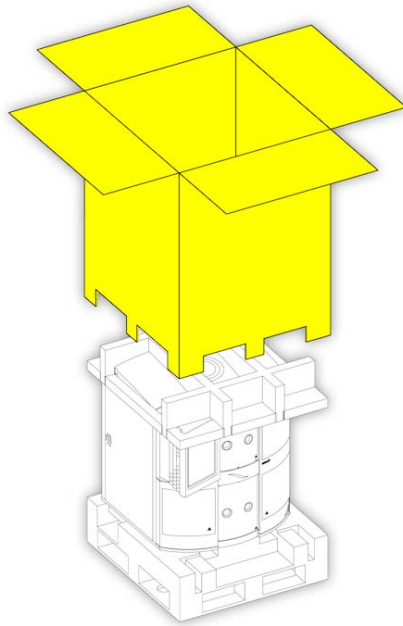
Unpacking

Ensure that you retain all packaging since this will be required should you need to transport the instrument to another location.

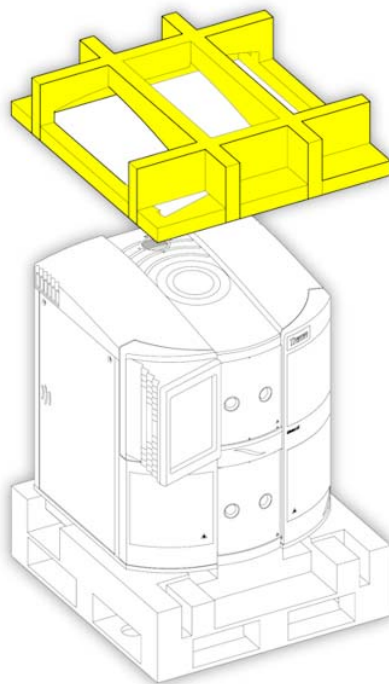
To unpack Gemini AS:



Remove the packing bands from around the outside of the packaging.



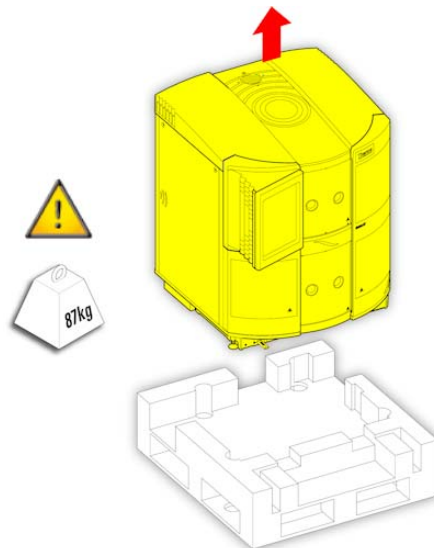
Remove the outer packaging.



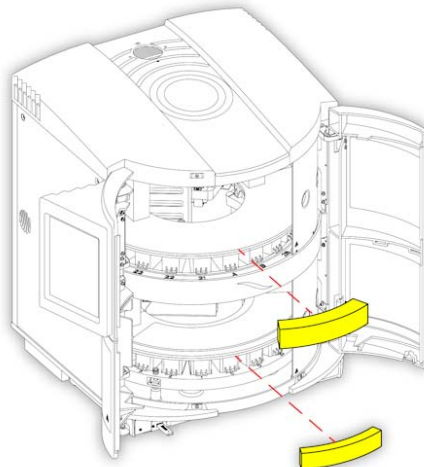
Remove the foam inner packaging.



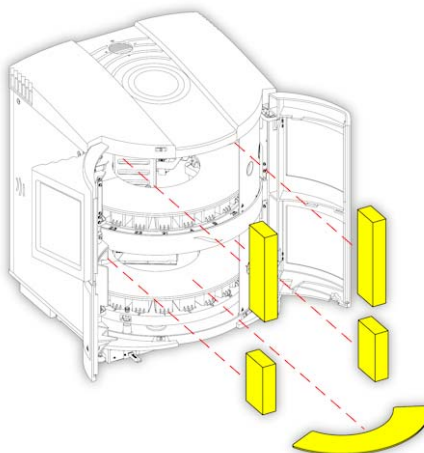
THE GEMINI AS IS HEAVY (87 KG (192 LB) WITH ALL POTS FITTED. TAKE THE NECESSARY HEALTH AND SAFETY ADVICE BEFORE LIFTING THE INSTRUMENT FROM ITS WOODEN BASE.



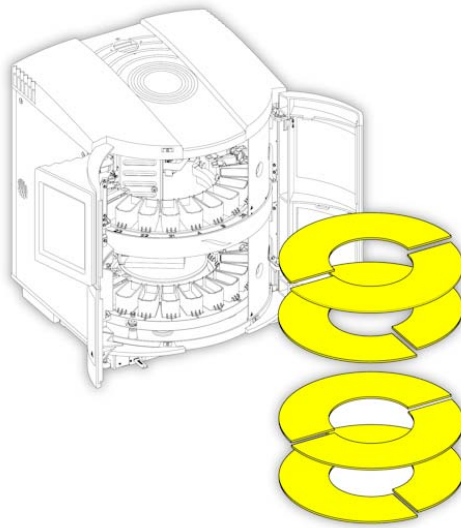
Lift the Gemini AS off the wooden packaging base and place the instrument onto a bench.



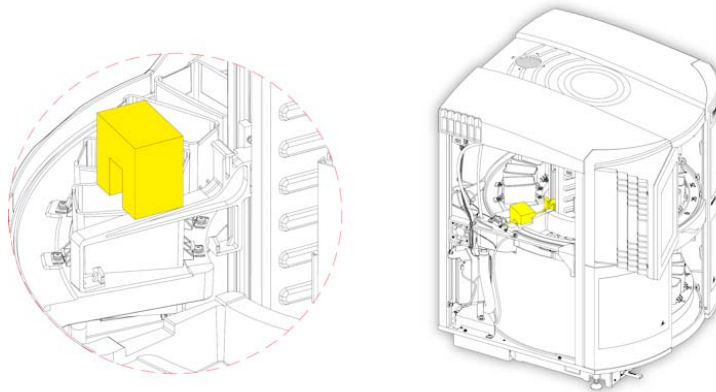
Open the instrument's main doors and remove the inner foam pieces from behind the sliding doors.



Remove the 2 foam blocks from the upper turntable and the 2 foam blocks and 4 multi-pot covers from the lower turntable. Keep the multi-pot cover accessories for later use.



Remove the 4 four cardboard inner pieces from the upper and lower turntable.



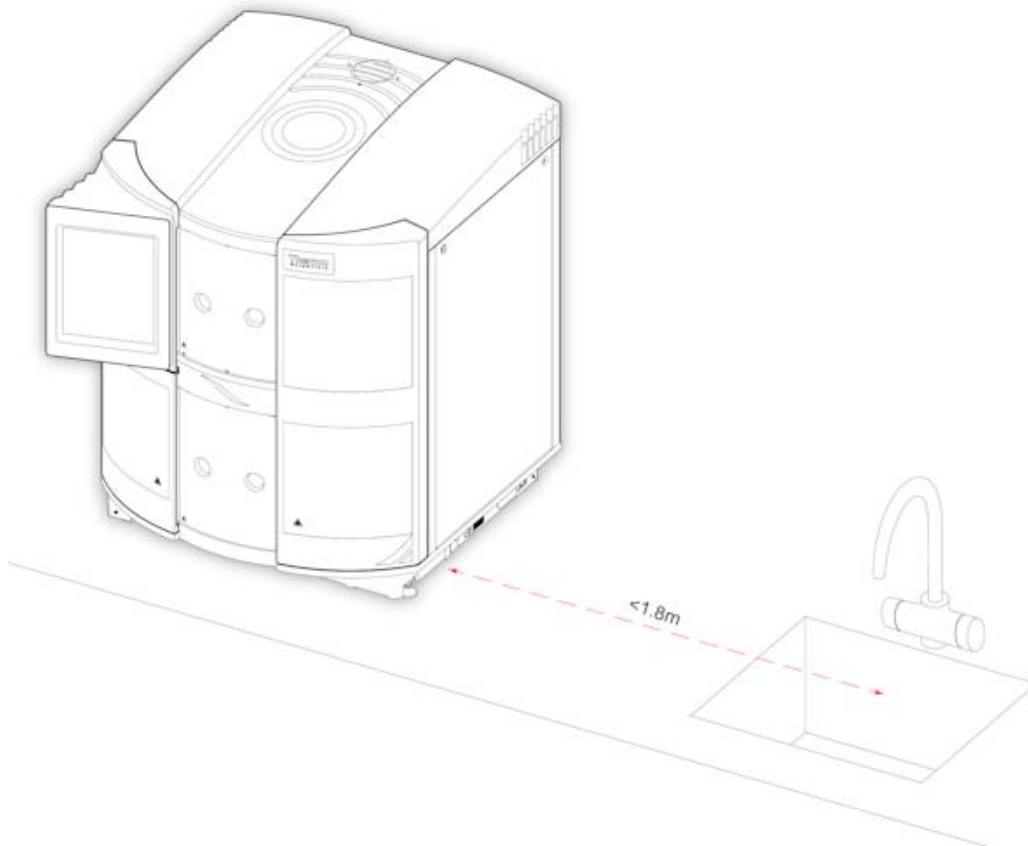
Remove the small foam block securing the pick up arm. Remove the baskets from the front pots and keep them for later use.

Instrument Positioning

The instrument must be positioned as close as possible to a drain and water supply.



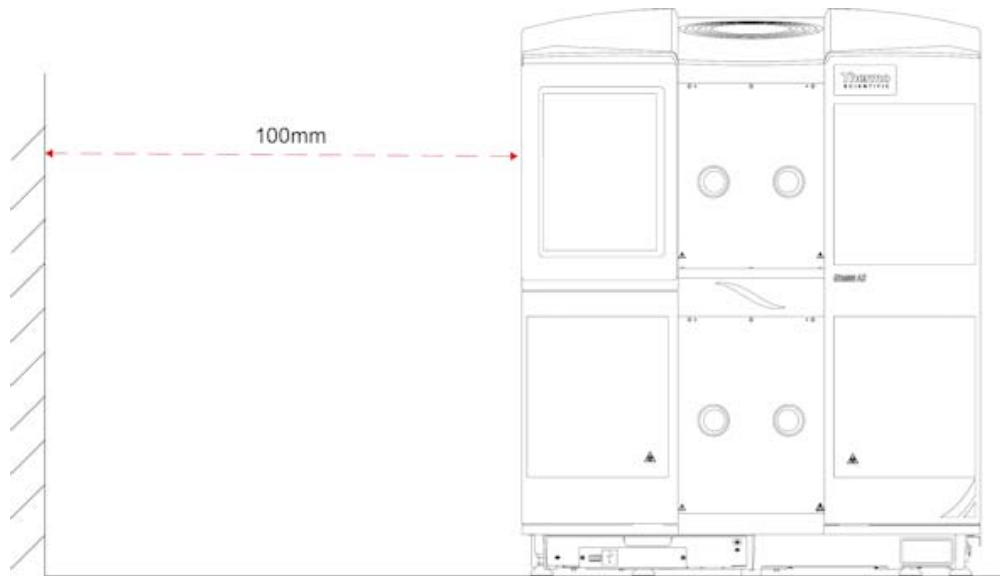
The touchscreen protrudes out past the front of the instrument. Consider the access needs of other users when positioning the instrument to avoid potential injury.



Position the instrument no more than 1.8 m (6 ft) from a drain and water supply

The bench should be rigid and level and made of a non-flammable material and be at least 600 mm (24 in) deep. Ensure that the bench is able to hold the weight of the instrument, which is 100 kg (220 lb) when fully loaded with reagents and accessories.

Make sure that there is at least 100 mm (4 in) clearance around the fan inlet on the left-hand side of the instrument and the fan outlet on the top of the instrument.



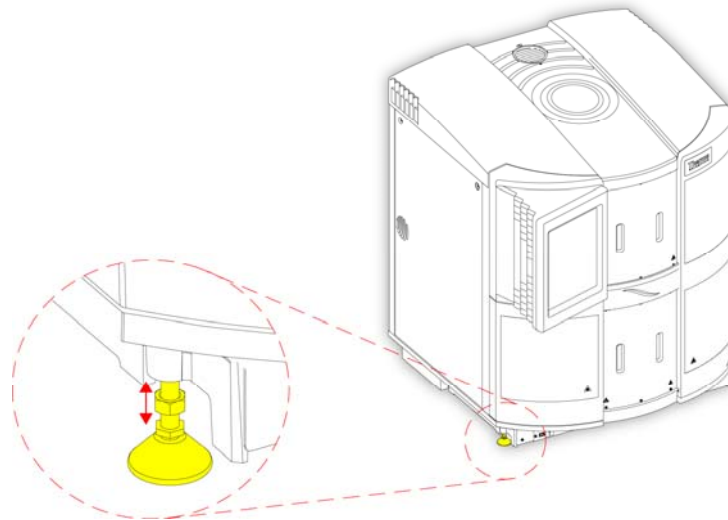
Ensure adequate clearance of at least 100 mm (4 in) for fan inlets

Levelling Gemini AS

The instrument must be level before use.

To adjust the levelling feet:

- Use a wrench (spanner) to loosen the lock nut on the foot.
- Adjust the height of the foot with the wrench (spanner) on the lower nut.



Levelling the instrument

- When the instrument is level, re-tighten the lock nut to secure the foot in position at the chosen height.

Connecting the Water Supply and Drainage

The Gemini AS comes fitted with a drainage hose and has a 2.5 m (8 ft) water supply hose included as standard.

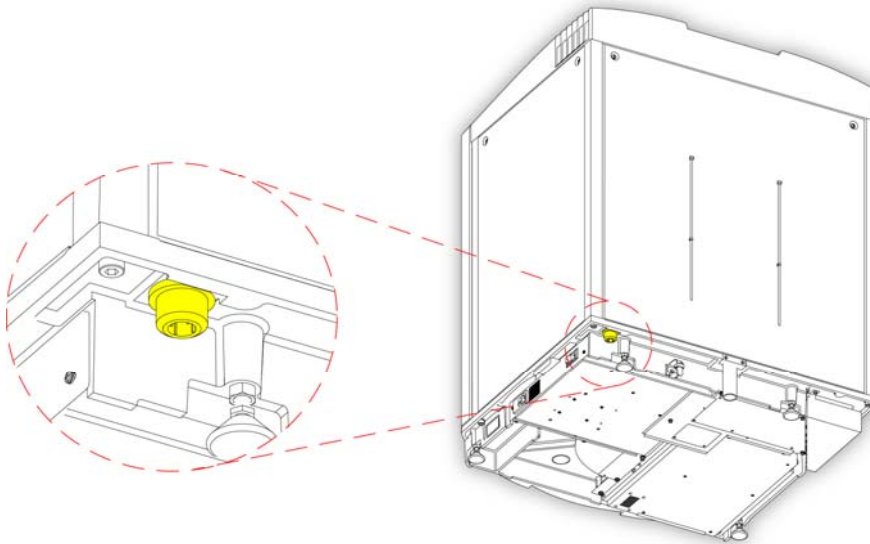
Note

The instrument is fitted with a flow regulator to automatically regulate the water flow. If the water pressure exceeds 10 bar (145 psi) at 20°C or 8 bar (116 psi) at 40°C, a pressure reducing valve must be installed.

The instrument meets the requirements of EN 1717 for backflow prevention of a potable water supply, category 4. However, if the instrument could be used with fluids that may contain concentrations of radioactive or very toxic substances or pathogenic organisms such as faecal material or other human waste, butchery or other animal waste or pathogens from any other source, and could therefore pose serious health hazards, then an increased level of protection is required. Always check local regulations and install additional external protection if necessary.

To fit the supply hose:

- Identify the threaded water inlet port at the bottom left-hand corner of the instrument, as viewed from the back.



The water inlet point - used to connect the water supply to the instrument

- Connect the 90° elbow fitting on the supply hose securely to the threaded inlet port.
- Attach the other end of the supply hose to a water source.



The water pressure of the supply must be between 0.2 bar (3 psi) and 10 bar (145 psi) at 20°C or 8 bar (116 psi) at 40°C.

- Uncoil the drainage hose and run the drainage hose from the back of the instrument to a drain point. Ensure that the drainage hose is laid flat across the bench. The drainage hose should be cut to keep it as short as possible.



Only discharge waste water to the drain if allowed by local water regulations; if in doubt seek guidance from your local waste water authority.



Ensure water fittings are connected correctly. Consider nearby electrical connections and other risks.

Fitting the Filter

Gemini AS is delivered with a new carbon filter fitted into the instrument. However, the plastic wrapper must be removed from the filter before the instrument is used.

Note

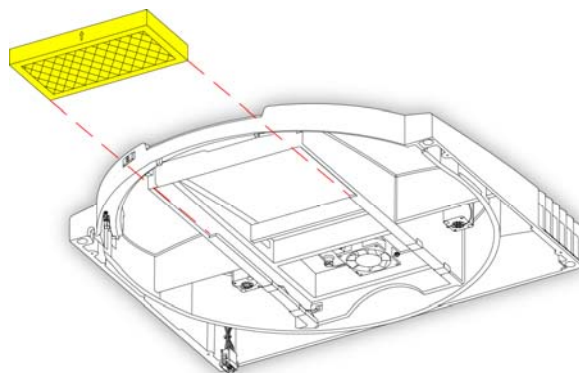
The filter fits tightly into the instrument for efficient air extraction. It is recommended that you change the filter every three months. To maximise the useful life of the instrument's extraction filter, you should define the filter change interval. When the filter reaches its maximum working time, an alert icon is displayed on the screen indicating that the filter needs to be changed. See [Setting the Filter Change Interval](#) for details.



A carbon filter must be installed in the instrument at all times to extract solvent vapours. If no filter is fitted, the extractor fan will not operate.

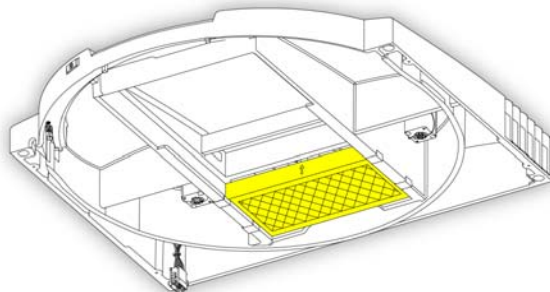
To remove and replace the filter:

- Remove the filter from the instrument and remove the plastic wrapping. If you are changing the filter, remove the old one and remove the wrapping from the new filter.
- Place the filter into the front recess of the top cover channel making sure that the air flow arrow is visible from the front of the unit and that it is pointing upwards into the cover.



Fitting the filter into the instrument

- Slide the filter along the channel towards the rear of the unit. Make sure that it slides over the spring flaps and that it is secure against the rear of the channel.



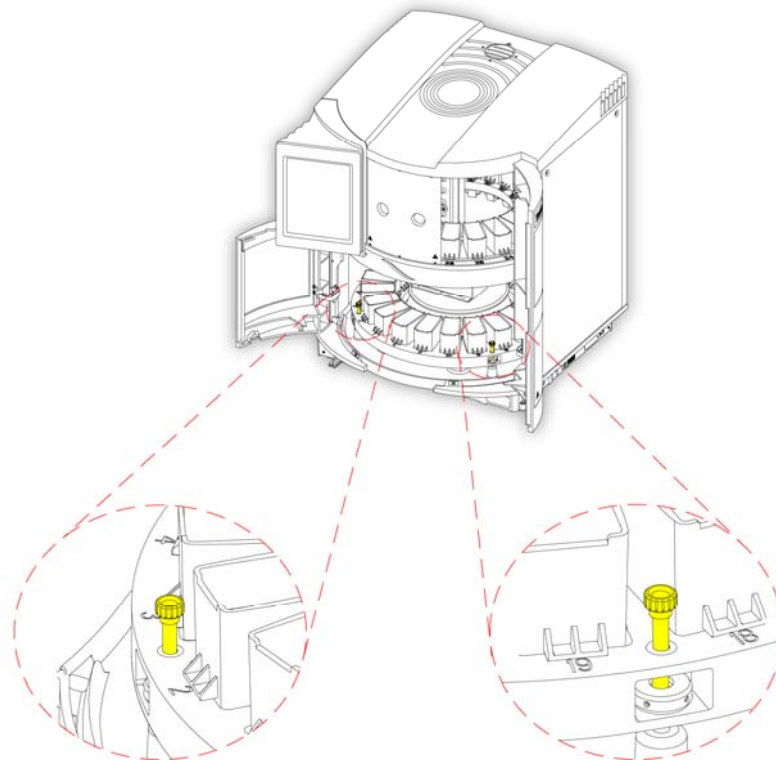
Filter secured into position

Adjusting the Turntable

Loading of reagents and cleaning of the reagent pots inside the instrument can be made easier by manually revolving the lower turntable, as required.

To manually rotate the turntable:

- Open the main access doors.
- Lift the two black locking knobs on the turntable, between pots 2 and 3 and 18 and 19, until they click into the raised position.



Releasing the locking knobs to rotate the lower turntable

- Gently rotate the turntable to the left or right, as required.



If reagents are loaded, do not rotate the turntable quickly as this may cause spillage of reagents.

- To lock the turntable back into position, line up the black locking knobs with their respective holes and push them down so they click into place.

Note

The main access doors will not close if the turntable is not correctly orientated and both locking knobs are not in their fully down position.

Electrical Requirements

The electrical requirements of the instrument are as follows:



The Gemini AS is mains operated and requires an AC power source.



The Gemini AS must be plugged into a properly earthed mains supply.



Position the Gemini AS such that it is possible to interrupt the mains supply at the source by removing the plug from the socket and switching the battery isolator switch to off (O).



This instrument is supplied with power cables suitable for the UK, the USA, France and Germany. If an alternative plug is required, a technically-competent person must remove the moulded plug and replace it with a suitably rated, fused plug.



The wiring convention is as follows:

- Brown Wire - Live (L or L2) terminal
- Blue Wire - Neutral (N or L1) terminal
- Green/Yellow - Earth (E, ground or \perp) terminal




The instrument is fitted with a rating plate, which describes the unit's electrical requirements.

Thermo Tudor Road, Manor Park,
SCIENTIFIC Runcorn, Cheshire, WA7 1TA, UK

Nominal Ratings: 100-240V~
50/60 Hz
300VA

Fuse Rating: 2 x T10A 250V

MADE IN UK

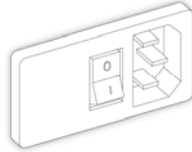
CE 

 **US LISTED**
Laboratory Equipment
3LVP E 312010

Start-up Procedure

Once Gemini AS has been unpacked and installed, it can be connected to mains power. Before connecting the instrument, ensure that the mains supply voltage corresponds with the voltage rating on the rating plate on the back of the instrument.

To connect Gemini AS to the mains supply:

- Ensure the mains power switch is set to the **O (OFF)** position.

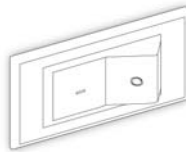


Mains power switch - set to OFF

- Insert the appropriate moulded power cable, supplied with the instrument, into the 3-pin socket on the right-hand side of the instrument.
- Clip the wire frame over the moulded end to secure the cable in place.
- Connect the other end of the cable to a suitable mains supply.

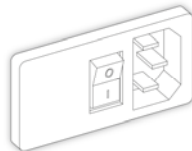
To start up the instrument:

- Press the **I (ON)** side of the battery isolation switch.



Battery isolation switch

- Press the **I (ON)** side of the mains power switch.



Mains power switch set to ON

Both switches are located on the right-hand side of the instrument (see [Identification of Parts](#)).

Note

When connecting the power supply for the first time, the battery will take approximately 14 hours to charge. The battery isolation switch must be left in the ON position until the battery is checked at the annual service or if the unit is to be shut down and transported (see [Appendix D - Shut Down Procedure](#)).

Options Menu

On initial start up of the Gemini AS, the Options Menu screen is displayed. The available menu options are shown in the top panel of the screen with the selected option shown in the bottom panel.



The Options Menu

From this screen you can select the following options:

<p>Select Language</p>	<p>Select this option to set the user interface language. Note that the Select Language option is selected by default whenever you open the Options Menu screen.</p>
<p>Select Sounds</p>	<p>Select this option to associate specific sounds with specific events.</p>
<p>Set Time</p>	<p>Select this option to set the system time, which is shown in the bottom left of all Gemini AS screens.</p>
<p>Set Date</p>	<p>Select this option to set the system date, which is shown in the bottom left of all Gemini AS screens.</p>
<p>Add Reagents</p>	<p>Select this option to add new reagents. Refer to Reagent Management for more information on this option.</p>
<p>Change PIN</p>	<p>Select this option to enable or disable access code protection. When enabled, small padlocks appear on some of the buttons on the Options Menu and on the Setup Protocols and Setup Sets buttons on the Start Up screen.</p>

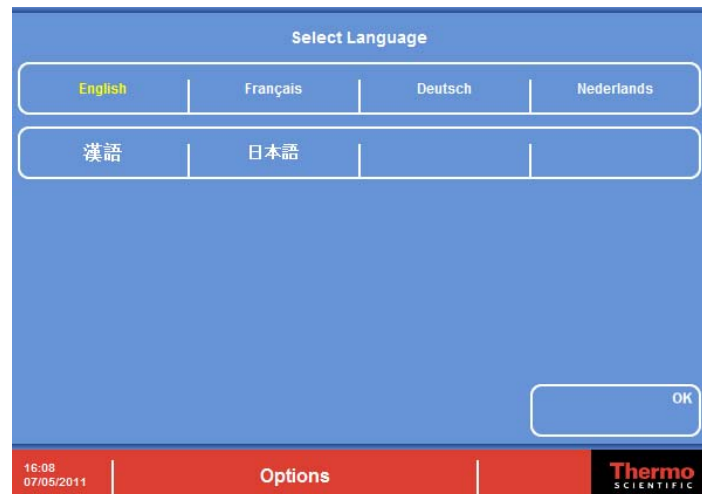
Touch Calibration	Select this option to calibrate the touchscreen. Refer to Calibrating the Touchscreen for more information on this option.
Software Update	This option should only be used by service personnel when a software update is detected by the Gemini AS.
Engineering Screen	Select this option to review the status of voltages and sensors within the instrument. Note that this option is not for general use, but you may be requested to access it by a service engineer.
↩	Closes the Options Menu screen and takes you to the Start Up screen which is used to initiate staining.

Setting the System Language

Before you begin using Gemini AS, choose the required user interface language.

To set the system language:

- From the Select Language screen, press the button corresponding to the required language.



The Select Language screen

- Press **OK**.

Setting the Time and Date

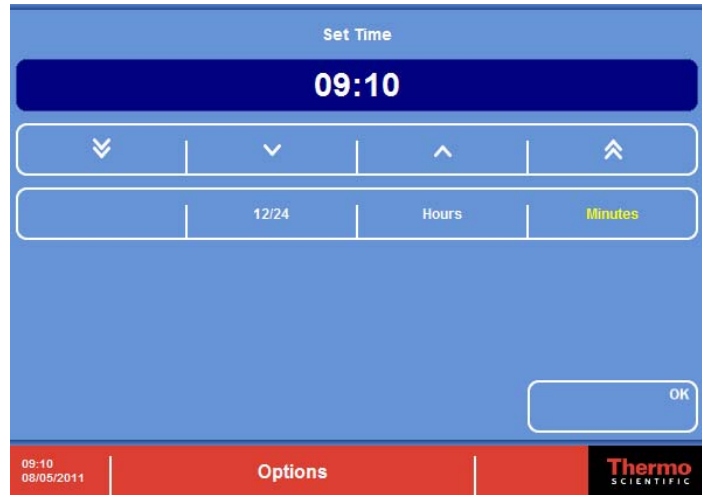
Once you have selected the display language, you should check, and if necessary, adjust the system's time and date.

Note

Both time and date can be changed later, as required, but not when slides are being stained.

To set the system time:

- From the Options Menu screen, press **Set Time** to display the Set Time screen.

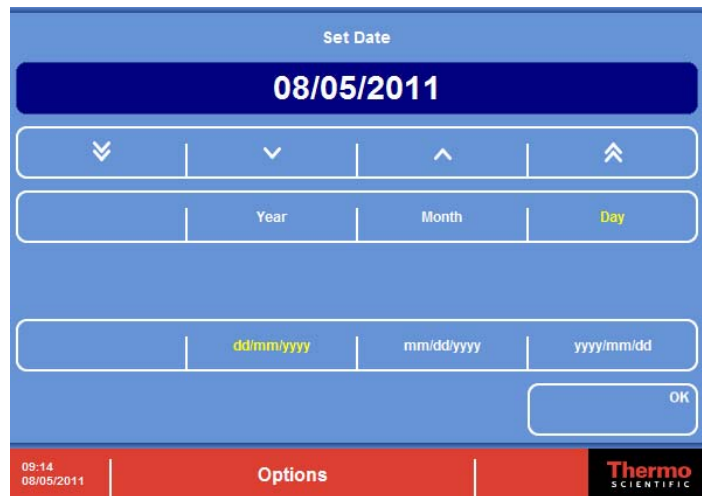


The Set Time screen

- To toggle between 12- and 24-hour time format, press **12/24**. When selected (shown in yellow text), the time is shown in 12-hour format as 'am' or 'pm'; when not selected it is shown in 24-hour format.
- Press **Hours** or **Minutes** and use the UP and DOWN buttons to set the required time.
- Press **OK**.

To set the system date:

- From the Options Menu screen, press **Set Date** to display the Set Date screen.



The Set Date screen

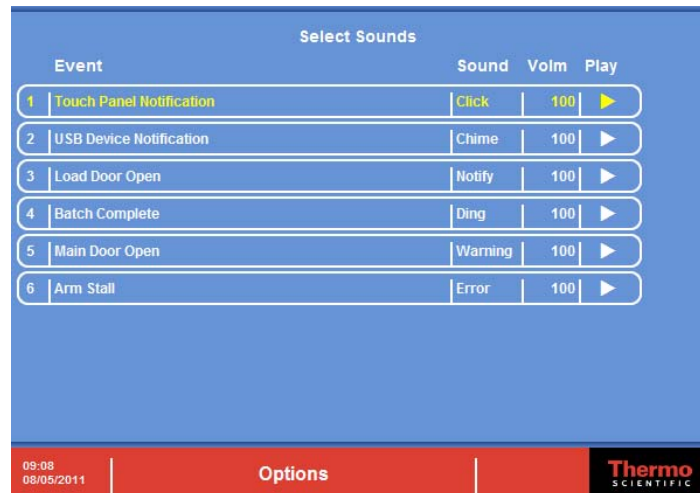
- Choose the required date format by pressing the appropriate button. The selected date format is shown in yellow text.
Available date formats are **dd/mm/yyyy**, **mm/dd/yyyy** and **yyyy/mm/dd**.
- Press **Year**, **Month**, or **Day** and use the UP and DOWN buttons to set the required date.
- Press **OK**.

Setting the Audible Warnings

You can choose whether you want Gemini AS to give audible warnings when specific system events occur. By default, all audible warnings are enabled, but these can be changed, as required. Each event has a different sound associated with it so that events can be easily differentiated.

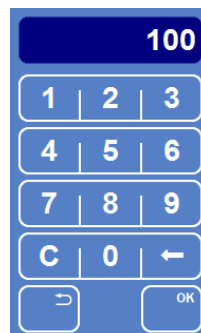
To change system sounds:

- From the Options Menu screen, press **Select Sounds** to display the Select Sounds screen.



The Select Sounds screen

- Select the required event by pressing on its name.
- To preview the associated sound, press the **Play** button ▶.
- To change the volume, press the **Volm** button to display a pop-up number pad.



Changing the volume

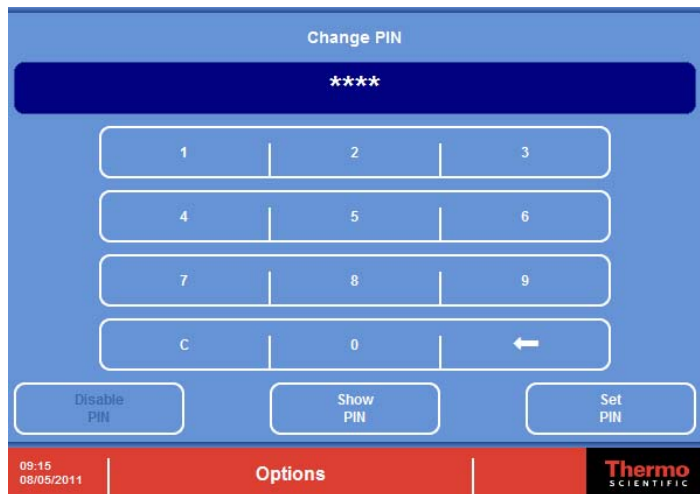
- Use the number pad to enter the new volume level (the range is from 0-100). Press **OK**. To disable the sound, enter a value of **0**.
- To change the sound associated with an event, press the selected sound until the one you require is displayed.

Enabling Access Code Protection

Access code protection allows the System Administrator to protect certain key system functions to prevent accidental or unauthorised modification of critical information required to run Gemini AS. With no functions protected, operators can move freely between screens and select options without restriction. When access code protection has been enabled, a small padlock icon is displayed on some buttons and a four-digit access code (PIN) must be entered to gain access to that function.

To enable access code protection:

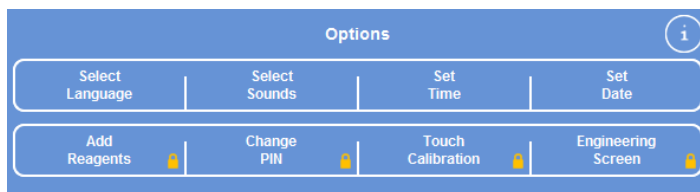
- From the Options Menu screen, press **Change PIN** to display the Change PIN screen.



The Change PIN screen

- Enter a new PIN (four digits) using the keypad. It is not recommended that you use the default PIN (0000).
- Press **Set PIN**.

Small padlock icons appear on some of the Options buttons. To use these options, the PIN must be entered.



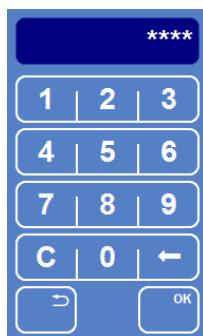
Options Menu with access code protection enabled

Note

*When you enter a number on the number pad, the numbers are masked for security purposes. To display the numbers as they are entered, press **Show PIN**.*

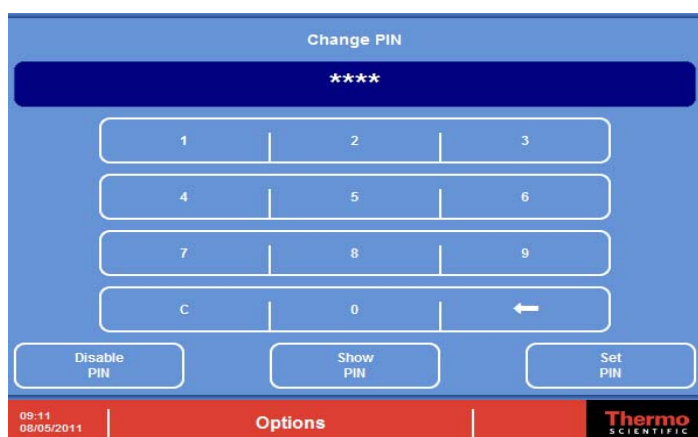
To disable access code protection:

- From the Options Menu screen, press **Change PIN**.
- Enter the current PIN using the number pad. Note that you cannot disable access code protection if you do not know the current PIN.



Entering the PIN

- Press **OK**.
If the PIN is correct, the Change PIN screen is displayed.



The Change PIN screen

- Press **Disable PIN** to disable access control.

Using the Other Options

The other buttons on the Options Menu provide access to the following options:

Misc. Options

- Set the carbon filter change interval.
- Reset the carbon filter usage count.
- Enable or disable reagent usage alerts.

USB Options

- Load and save protocols, protocol sets and user reagents.
- User reports.
- Engineer reports.

Software Update

This option should **only** be used by service personnel when a software update is detected by the Gemini AS.

Shutdown Procedure

Before switching the Gemini AS off, ensure that there are no running batches and that there are no baskets in any of the pots.

To shutdown Gemini AS:

- Switch the mains power switch to **O (OFF)**.
- Switch the battery isolation switch to **O (OFF)**.



When switched off, the extractor fan does not operate. Ensure that you place pot covers over pots containing reagents likely to produce fumes caused by evaporation.



Ensure that you keep sources of ignition away from the Gemini AS if it is left loaded with reagents when not in use.

Emergency Shutdown Procedure



In an emergency, switch the battery isolation switch to **O (OFF) and remove the power cord to completely isolate the power from the instrument.**

Chapter 3 - Basic Operation

This chapter describes the basic operation of the Gemini AS instrument.

Read this chapter to learn how to:

- Load slides into baskets for staining and use large slide basket adapters to stain slides of different sizes.
- Select and load a protocol set.
- Load reagents into the instrument.
- Start and monitor a staining protocol.
- Use urgent and step start.
- Respond to quality control alerts.
- Interrupt and resume a staining protocol.
- Cancel or return a batch of slides.
- Complete a staining run.

Processing Overview

Gemini AS is an automated slide stainer which takes batches of slides through defined staining protocols. The main steps are as follows:

- Place slides into a slide basket.
- Select and load the required protocol set. The protocol set defines the available staining routines.
- Load reagents into the instrument. The reagents required depend on the selected protocol set.
- Open one of the instrument's load doors, place a slide basket in the starting position and close the load door.
- Start the required protocol. The available protocols depend on the selected load door.
- Once staining has commenced, additional baskets can be introduced into the instrument.
- Remove the slide basket when staining is complete.

Loading Slides into Baskets

Slide baskets are used to hold the slides in the instrument during the staining process. Baskets are picked up by the Gemini AS arm which then moves slides from one reagent to another until staining is complete.

Note

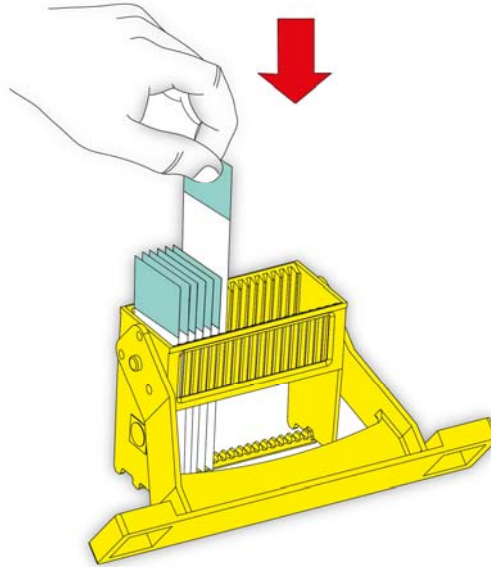
Five Gemini AS baskets and five ClearVue-compatible baskets are provided as standard with Gemini AS. Both types can also be ordered separately. See [Appendix A - Spares and Accessories](#) for ordering details.

Gemini Baskets

Gemini AS baskets each hold up to 20 slides which are loaded from the top of the basket.

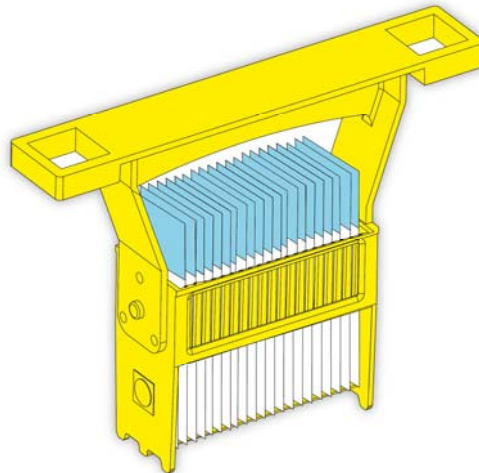
To load slides into Gemini AS baskets:

- Carefully load the slides into the slide basket.



Loading slides into the slide basket

- Rotate the basket handle up until it locks into place above the slides. This holds the slides in place in the basket and allows the basket to be easily carried to the instrument.



Slides locked into place

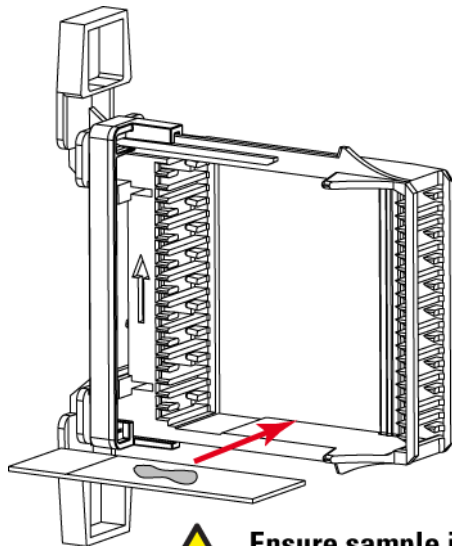
- Baskets are now ready to be loaded into the instrument.


ClearVue Baskets

Slides can also be loaded into Gemini AS -compatible ClearVue baskets, stained using Gemini AS and then coverslipped using ClearVue.

To load slides into Gemini AS-compatible ClearVue baskets:

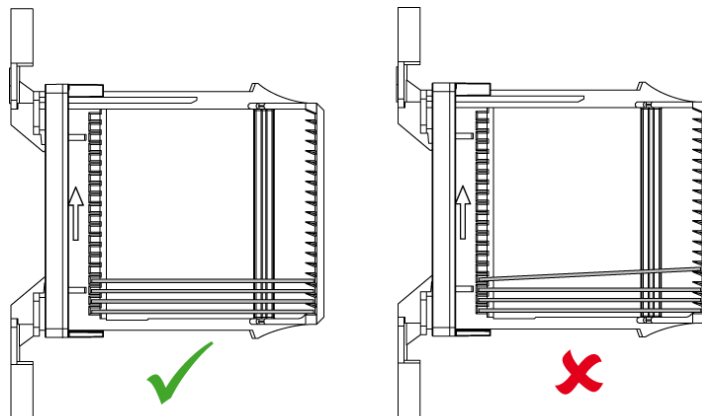
- Move the slide retainer towards the basket handle and load the slides into the basket from the side.
- Insert slides as shown, starting from the bottom shelf with the sample on the top of the slide.



 **Ensure sample is on the top of the slide!**

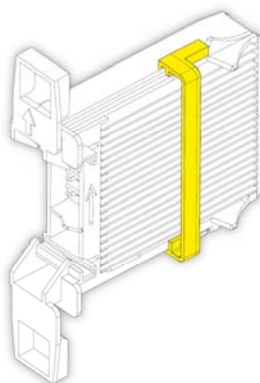
Loading slides

- Ensure that slides are not misaligned when loaded into the basket.



Correct slide alignment in the basket

- Move the slide retainer back down the basket and lock into place, holding the slides in position.



Slides locked into position

- The basket can now be loaded into Gemini AS for staining. Once staining is complete the basket can be transferred to ClearVue.

Using the Large Slide Basket Adapters

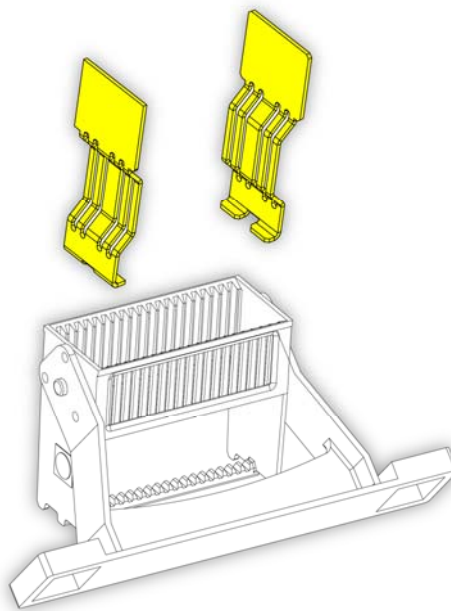
The large slide basket adapter allows slides of up to 75 mm x 58 mm (3 in x 2¼ in) to be stained using Gemini AS baskets.

Note

Large slide basket adapters are not provided as standard with Gemini AS but can be ordered separately. See [Appendix A - Spares and Accessories](#) for ordering details.

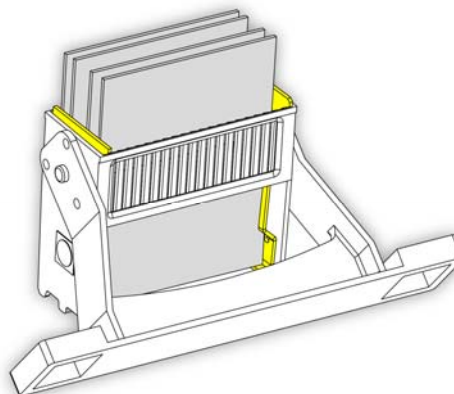
To use the large slide adapters:

- Slide a pair of adapters into the basket slots at the required size.



Fitting the slide adapters

- Insert up to four large slides into the adapter slots.



Loading slides using the slide adapters

- Multiple sets of adapters can be used to allow varying slide sizes to be stained simultaneously.

Running a Protocol

Once slides have been loaded into baskets, they can be stained using one of the instrument's staining protocols. To run a specific protocol, you must first load a protocol set and then load the required reagents into the instrument. Slide baskets can then be placed into the appropriate load door. Baskets are picked up and moved through the various reagent pots once the protocol is started. When the protocol has completed, baskets can be removed from the instrument for subsequent steps, such as coverslipping.

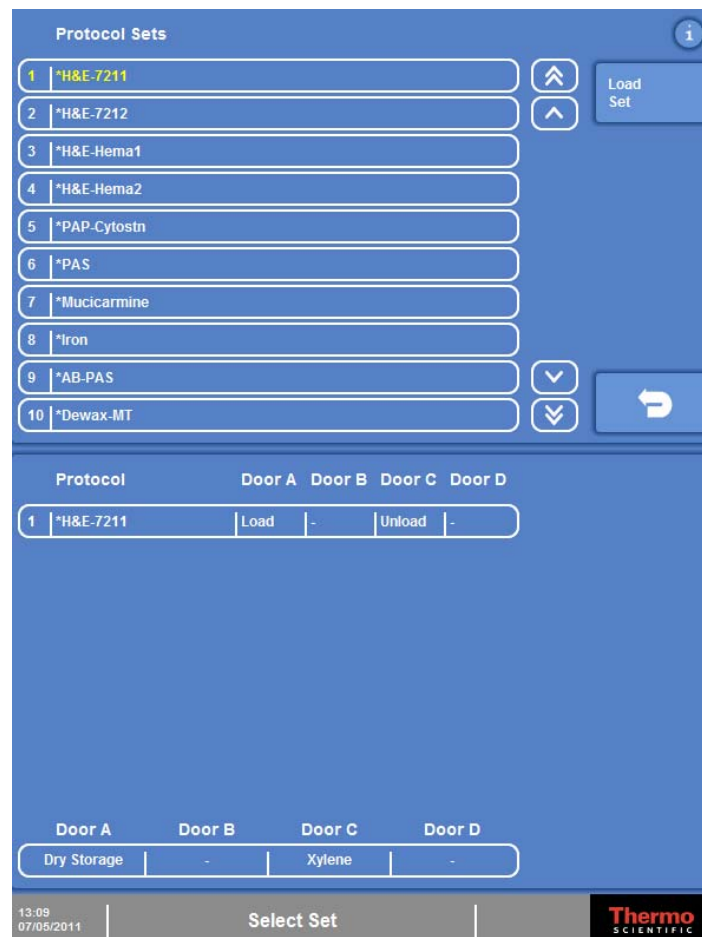
Selecting and Loading a Protocol Set

To start a staining procedure you must first select and load a protocol set. The protocol set dictates which staining protocols are available for selection once slides are loaded into the instrument.

To select and load a protocol set:

- From the Options screen, press **Back** to display the Start Up screen.
- From the Start Up screen, press **Select Set** to display the Select Set screen.

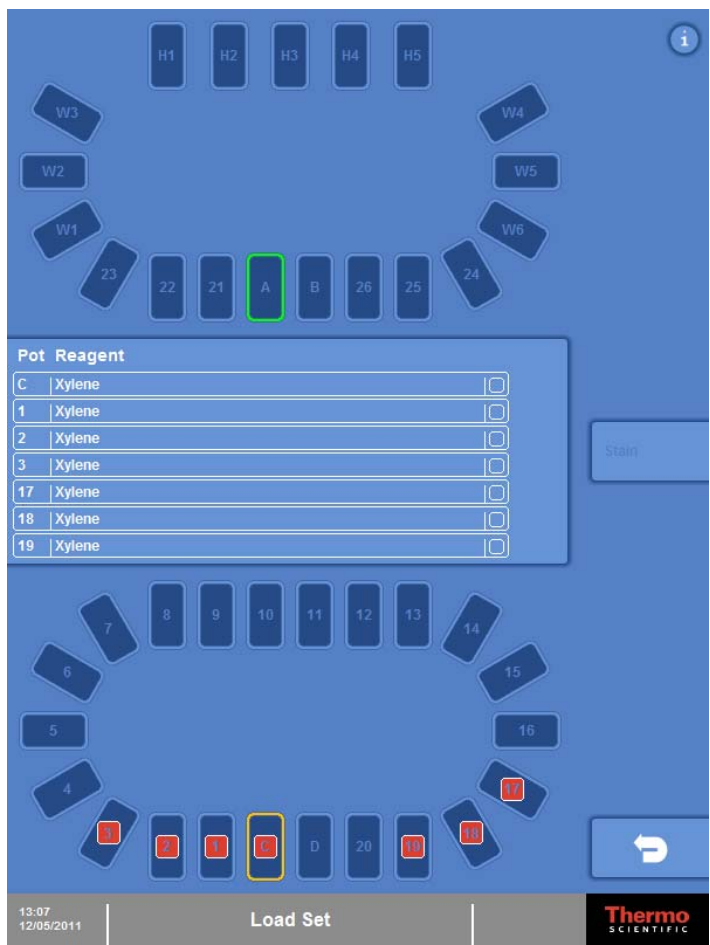
The available protocol sets are shown in the top panel of the screen with the load and unload door designations and reagents for the selected protocol in the bottom panel.



The Select Set screen

- Select the protocol set that you want to load from the list of available protocol sets in the top panel of the screen and press **Load Set**.

The selected protocol set is loaded and the Load Set screen is displayed. This screen shows you a layout of the Gemini AS pots and a list of the reagents that need to be loaded into each pot.



The Load Set screen

Loading Reagents

Once you have selected the protocol set that you want to use, you need to load the various reagents that are required to run the protocols in the selected set and confirm these are loaded on the Load Set screen. To help you load reagents correctly, the Load Set screen displays a diagrammatic layout of the pots inside the instrument.



TAKE APPROPRIATE CARE WHEN HANDLING HAZARDOUS REAGENTS. WEAR GLOVES OR OTHER PPE IF APPROPRIATE.



DO NOT OVER-FILL THE REAGENT POTS. CAREFULLY POUR THE REQUIRED REAGENT INTO A REAGENT POT TO THE FILL LINE PROVIDED.



DO NOT FILL HEATER STATIONS WITH REAGENTS.



DO NOT SPLASH OR POUR REAGENTS NEAR TO THE HEATER STATIONS.



SOME REAGENTS USED IN THIS INSTRUMENT ARE FLAMMABLE OVER THE OPERATING TEMPERATURE RANGE. THIS INSTRUMENT HAS BEEN DESIGNED TO MINIMISE RISKS OF IGNITION IN NORMAL USE AND SINGLE FAULT CONDITION.



DO NOT USE SOURCES OF IGNITION IN THE VICINITY OF THE INSTRUMENT WHEN IT IS LOADED WITH REAGENTS.



IF ANY REAGENTS ARE IGNITED, THE INSTRUMENT ENCLOSURE WILL NOT CONTAIN A FIRE. ENSURE THAT APPROPRIATE PRECAUTIONS ARE IN PLACE BEFORE USE.

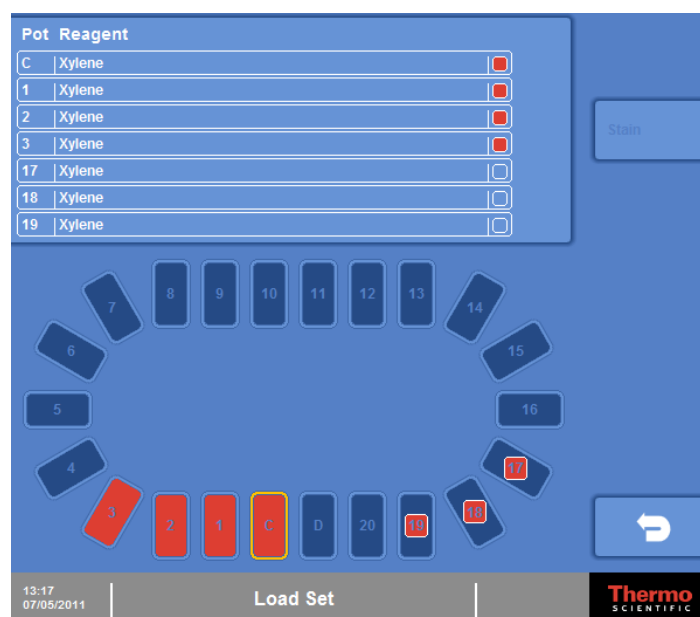
To load and confirm reagents:

- Open the main access doors.

Note

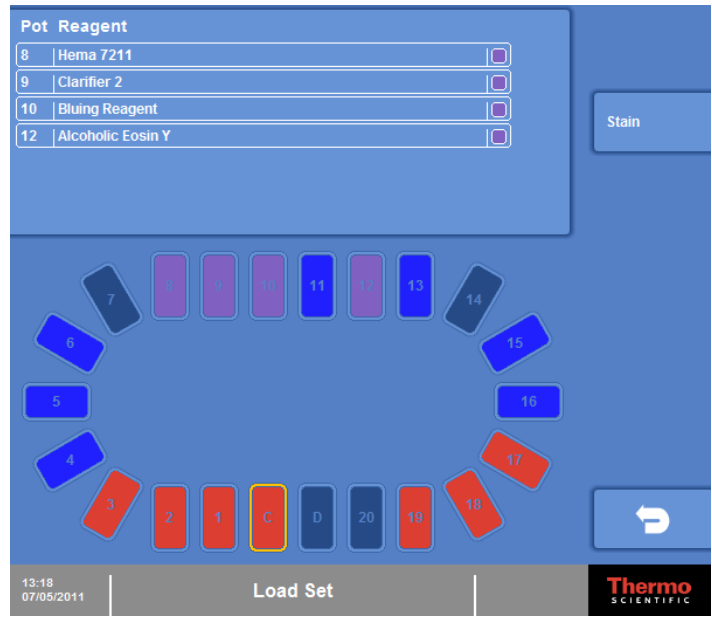
The left-hand door is in two parts. Open the lower portion of the door to load the reagents on the lower turntable while maintaining access to the touchscreen. To gain access to all pots within the instrument, open the upper and lower parts of the left-hand door.

- Unlock the turntable. To do this, refer to [Adjusting the Turntable](#). This allows you to rotate the lower deck to load reagents more easily.
- Refer to the Load Set screen and load each of the reagent pots with the appropriate reagent. To help you load the correct sets of reagents, loading will start with clearants (pots identified in red), progress to dehydrants (blue) and finish with staining reagents (purple).
- As each reagent pot is placed into the correct pot position on the Gemini AS, press the corresponding pot icon on the display. The icon will change to a solid colour and the centre panel will also update.



The Load Set screen, pots 17, 18 and 19 are still to be loaded with xylene

- When all pots are loaded and confirmed, the **Stain** button is enabled.



All pots are loaded

- Ensure that you have locked the turntable and then close the main access doors.
- Press **Stain** to acknowledge the instrument is ready for staining.

Loading and Staining Slides

To initiate staining, baskets must first be loaded into the instrument through the appropriate load door. You can then start the protocol associated with the selected load door.



The load and unload doors are intended for access to the reagent pots directly behind the doors. Be aware of moving parts during operation. Do not reach further into the instrument as the arm can move both horizontally and vertically without warning and cause injury. Do not touch the arm mechanism at the centre of the instrument. Do not rest your hands on top of the reagent pots.



Remove all single or multi-pot reagent covers before any baskets are loaded.

Note

You can only load baskets into the instrument if the load positions are not occupied by other baskets.

To load and stain slides:

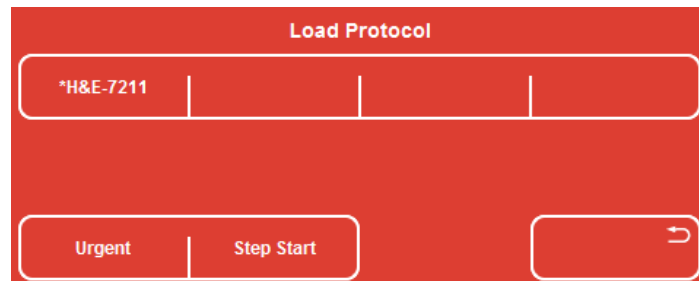
- Slide open the appropriate load door. Available load doors are outlined in green on the Stain screen.



Door A is available for loading

- Load the basket into the loading position and close the load door.

The Load Protocol window is then displayed in the centre of the screen. This lists all of the protocols in the selected protocol set that can be started from the selected load door. If you want to use an urgent or step start, refer to [Using Urgent Start](#) and [Using Step Start](#) for details.



The Load Protocol window

- Press the button corresponding to the protocol that you want to run.

The selected protocol is started. Note that the Batch Monitoring window replaces the Load Protocol window.

B#	Protocol	Step	Pot	Reagent	Time	End
02	*H&E-7211	1	A	Dry Storage	00:04	13:22 (C)

The Batch Monitoring window

- You can then either load another basket into the same load door (when the position is available - shown in green) or load a basket into another load door if one is available for the selected protocol set.

Using Urgent Start

If you have urgent samples, you can use the urgent start option to stain a basket of slides ahead of all others currently in the instrument without compromising the staining requirements of other batches.

Note

You can combine an urgent start with a step start, if required. Refer to [Using Step Start](#) for more information.

To use urgent start:

- Open the appropriate load door and load the basket into the loading position and close the load door. The Load Protocol window is then displayed. This lists all of the protocols in the protocol set that can be started from the selected load door.
- Press **Urgent**. The button text changes from white to yellow indicating that you have selected an urgent start. If you change your mind and want to cancel the urgent start, press the button again to revert to a normal start.

- Press the button corresponding to the protocol that you want to run.

The selected protocol is started.

Using Step Start

Step start allows you to select the step in a protocol at which the staining of a particular basket will start. This enables you to carry out specific steps without having to write new protocols. After selecting the required start step, the protocol will run through the remaining steps in order as usual.

Note

You can combine a step start with an urgent start, if required. Refer to [Using Urgent Start](#) for more information.

To use step start:

- Open the appropriate load door and load the basket into the loading position and close the load door.

The Load Protocol window is then displayed. This lists all of the protocols in the protocol set that can be started from the selected load door.

- Press **Step Start**.

The button text changes from white to yellow indicating that you have selected a step start. If you change your mind and want to cancel the step start, press the button again to revert to a normal start.

- Press the button corresponding to the protocol that you want to run.

A list of steps for the selected protocol is displayed.

- Choose the starting step. You can move up and down the list of steps using the scroll buttons, if required.



Selecting the starting step

- Press **OK** to start the selected protocol from the chosen start step.

Monitoring the Progress of a Batch

When a protocol is running, progress is displayed on the Batch Monitoring window. The position of each basket in the instrument is also displayed graphically on the Stain screen.



Basket and arm positions

In the example above, a slide basket is in pot 8 and the arm is in pot 13.

The following example shows the progress of a number of slide batches.

B#	Protocol	Step	Pot	Reagent	Time	End
01	*H&E (ES)	22	18	Xylene	00:57	14:59 (C)
03	*H&E (ES)	20	16	Xylene	00:08	15:01
05	*H&E (ES)	17	12	Alcohol 100%	00:33	15:05
06	*Counter (ES)	15	D	Xylene	--:--	16:16 (D)
07	*Counter (ES)	1	B	Dry Storage	00:15	15:11



The Batch Monitoring window shows the progress of each batch

In this example:

- Door A is available for loading; Door B is not as Batch 7 is still in position B.
- Batch 6 is ready to be unloaded from Door D. Refer to [Completing a Protocol](#) for information on how to unload the batch once it has completed.
- Batch 1 will be the next batch ready to unload at Door C since it is showing a defined end time and unload door in brackets after the time.

- The arm is currently in pot 16 (Batch 3), shown by a solid black line through the pot icon.

The information shown on the Batch Monitoring window is as follows:

Item	Description
B#	A reference number used to identify each batch of slides being processed.
Protocol	The name of the protocol being used to stain the batch of slides.
Step	The step number in progress.
Pot	The pot position currently occupied by the basket.
Reagent	The name of the reagent currently in use.
Time	<p>The time remaining for the current step. This counts down to zero as the step progresses.</p> <p> The time displayed may be greater than the expected step time if the step is defined as Standard or No Max in the protocol.</p> <p> If a step has an agitate setting of Frequent, then the time displayed is either the time until the next agitate cycle or the time until the step completes - whichever is closer.</p>
End	The time at which the protocol will be completed. The unload door is shown in brackets.

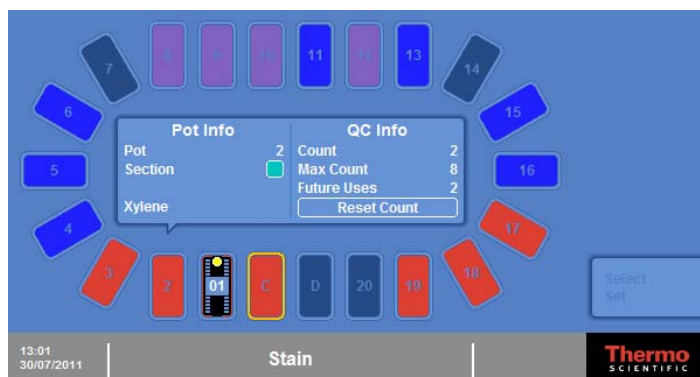
When batches are running you can pause the instrument if you need to replenish reagents or return a batch of slides to its load door if there is a problem. Refer to [Pausing the Instrument](#) and [Returning a Batch of Slides](#) for more information. Batches can also be cancelled in an emergency. To do this, refer to [Cancelling a Batch](#).

Checking Reagent Usage Counts

During staining you can query a reagent pot to check how many times the reagent has been used. This information will help you decide when to replace reagents.

To check reagent usage counts:

- From the Stain screen, press the reagent pot that you want to query.
Current usage count, maximum count and future uses are displayed.



Reagent usage information

- Press the same reagent pot to close the information balloon.

Responding to Quality Control Alerts

During staining Gemini AS counts the number of times a basket is placed in a pot. When the number approaches the maximum number of uses defined for the pot, quality control alerts are displayed on the Stain screen. You can then decide on the best time to change the reagent, dependent on the number of scheduled uses, the current usage and the maximum limit.

- When the count is within three of the maximum count, an amber warning circle appears around the reagent pot.
- When the count reaches the maximum count, a red warning circle appears around the reagent pot.

Note

Alerts are only displayed if they have been enabled by the Administrator in the Misc Options section of the Options screen.

Example

A pot has a maximum count of 10 uses; eight baskets have already been run. The pot shows an amber warning. Usage information is:

- Count: 8; Future Uses: 0; Max Count: 10.

Another two baskets are added. Usage information before the basket reaches the pot is:

- Count: 8; Future Uses: 2; Max Count 10.

After the baskets have passed through the pot, it shows a red warning. Usage information is:

- Count: 10; Future Uses: 0; Max Count: 10.

Another basket is added. The screen shows a warning on the centre panel that maximum usage will be exceeded; **Override** or **Cancel** options are offered. If override is selected, usage information before the eleventh basket has passed through the pot is:

- Count: 10; Future Uses: 1; Max Count Reset: 10.

Pausing and Replacing Reagents

If you choose to pause the instrument to replace the contents of a pot, then you will need to reset the use count. When the instrument is paused and the main doors are open, pressing the pot on the screen will display the usage information and a **Reset Count** button.

To replace reagents and reset the count:

- From the Stain screen, press **Pause**.
- Replace the required reagent.
- Press the pot on the screen.
- Press **Reset Count**.

The usage count is reset to zero; the scheduled count will not be affected.

- Close the main doors and resume staining.

Overriding a Maximum Use Alert

If the next scheduled basket will exceed the maximum number of uses for a particular reagent pot, you can override the limit and stain that basket.



Ensure that all baskets in progress can either complete or remain in 'No Max' steps if you decide to subsequently replace reagents following a QC override.

To override a maximum use alert:

- Press **OK** to override.
The basket is stained as normal.

Note

Gemini AS counts the number of times users have chosen to override a QC limit.

Pausing the Instrument

If you require access to the instrument whilst a batch is running, for example to replenish reagents, the instrument must be paused.



Ensure you pause the instrument rather than simply open the main doors.

To pause the instrument:

- From the Stain screen, press **Pause**.
The arm will move to a safe location and the display will indicate that the instrument is paused.
- Open the main doors, perform the required actions and close the main doors.
- Press **OK** to resume staining.



ENSURE THAT BATCHES IN PROGRESS ARE NOT IN TIME-CRITICAL STEPS TO AVOID POOR STAINING RESULTS. WHEN PAUSED, THE INSTRUMENT DOES NOT COUNT DOWN THE TIME.



BE AWARE OF THE ARM MECHANISM WHEN ACCESSING THE INSTRUMENT.

Returning a Batch of Slides

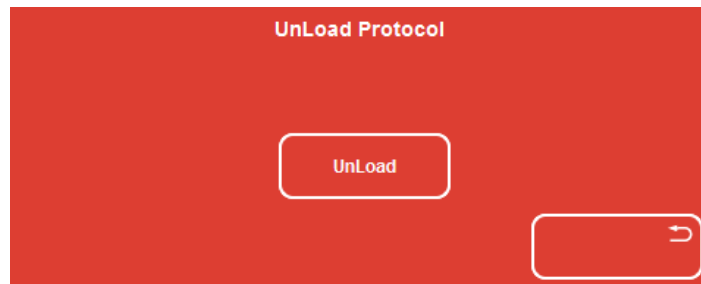
If there is a problem with a particular basket or the wrong staining protocol has been started, you can return the basket to its load door.



Ensure that the load door is empty when returning a batch of slides.

To return a batch of slides:

- From the Batch Monitoring window, select the batch of slides that you want to return.
- Press **Return**.
The slide basket is returned to the appropriate load door at the earliest opportunity.
- Open the door.
The UnLoad Protocol window is displayed.



Unloading the returned batch

- Remove the basket, close the door and press the **UnLoad** button.

Cancelling a Batch

Batches of slides can be cancelled and removed from the instrument in case of emergency.

To cancel a batch of slides:

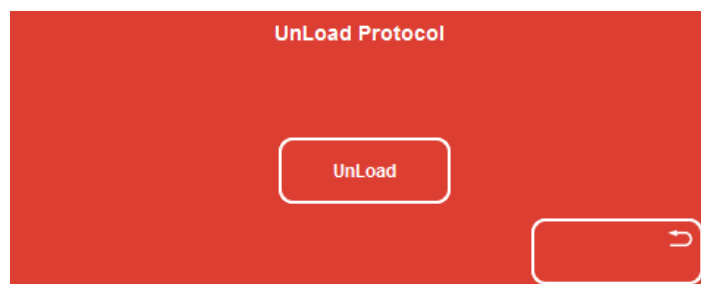
- Open the main access doors. The arm will stop immediately and an alarm will sound.
- Remove the required basket from the instrument.
- Press **Cancel Batch**.
- On the Batch Monitoring window, select the basket that you have removed.
- Press **OK** to remove the batch from the list.
- Close the main doors to resume staining.

Completing a Protocol

When a protocol is complete, the unload door icon on the Stain screen will flash and the batch number will be displayed on the unload door icon. The slide basket can then be removed from the instrument.

To complete a protocol:

- Open the unload door, remove the slide basket from the instrument and then close the unload door.
The Batch Monitoring window is replaced with the UnLoad Protocol window.



Unloading a batch

- Press **Unload** to acknowledge that the basket has been removed.
- Continue loading and unloading baskets until all slides have been stained.

Note

*When there are no more batches in the instrument, press **Select Set** to return to the Select Set screen. From here you can then either select a different protocol set or return to the Start Up screen if all slides have been stained for the day. You can also run a report which details all the batches stained during the current working day.*

Battery Back-up



The Gemini AS has a battery back-up in case of power failure - be aware that the arm may move even if the mains power has been switched off or disconnected.

The battery will last for a minimum of 40 minutes. When on battery power, heater stations and lights will be switched off and only baskets currently loaded will continue to run until completion, no new baskets can be loaded.

Note

It is recommended that a back-up of settings is kept on a USB memory drive as a precaution against loss or corruption of data.

Chapter 4 - Advanced Operation

This chapter describes some of the more advanced features of the Gemini AS, including how to define protocols to meet your own requirements and how to improve the throughput and efficiency of the instrument.

Read this chapter to learn how to:

- Create your own staining protocols and combine protocols into sets.
- Change the reagent layout and define the positions of the various reagents used in all active protocols.
- Change door designations to maximise slide throughput.
- Change the way in which reagents are shared and specify which reagent pots can be used for specific steps in protocols.
- Define new reagents.
- Enable reagent and filter usage alerts.
- Run reports.
- Update the system.

Protocols

A protocol is a set of instructions that the instrument uses to carry out a specific staining routine. Gemini AS comes pre-loaded with several commonly-used standard staining protocols which you can use to stain slides in your own laboratory. If you want to run specific staining routines, you can also create and save your own protocols. Each protocol can consist of up to 50 individual steps. The system allows up to 50 protocols to be created.

Protocols are managed from the Setup Protocols screen with options to create and copy protocols and define the required reagent steps. All protocols must begin with a load step and end with an unload step. Pre-stain, stain and post-stain steps are then defined in each protocol to move the slides through the required reagents.

Note

If the Administrator has enabled access code protection, you will need to enter the correct PIN to gain access to the Setup Protocols screen. Refer to [Enabling Access Code Protection](#) for details.

Viewing Protocol Details

You can view details of all of the protocols that have been defined on your instrument.

To view protocol details:





- From the Options screen, press **Back** to display the Start Up screen.
- From the Start Up screen, press **Setup Protocols**.

The available protocols are listed in the top panel of Setup Protocols screen. Individual steps of the selected protocol are displayed in the bottom panel. Steps are colour-coded for easy identification.

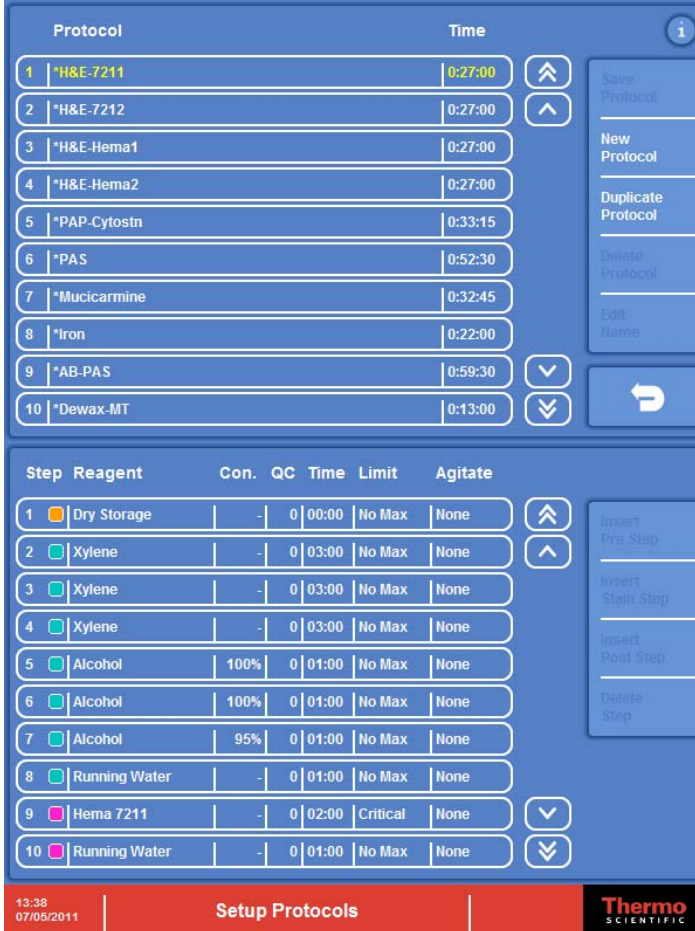
Colour	Reagent Type
Orange	Load Step
Cyan	Pre-Stain
Pink	Stain

Colour	Reagent Type
Green	Post-Stain
Red	Unload Step

Use the scroll arrow buttons to move up and down the list of protocols or steps, as required.

	Moves up the list of protocols or steps ten protocols or steps at a time.
	Moves up the list of protocols or steps one protocol or step at a time.
	Moves down the list of protocols or steps one protocol or step at a time.
	Moves down the list of protocols or steps ten protocols or steps at a time.

Protocol names prefixed with * are pre-defined and cannot be changed or deleted; these protocols can, however, be duplicated and then changed. See [Duplicating an Existing Protocol](#) for details.



The screenshot displays the 'Setup Protocols' interface. It is divided into two main sections: 'Protocol' and 'Step'.

Protocol Section:

Protocol	Time
1 *H&E-7211	0:27:00
2 *H&E-7212	0:27:00
3 *H&E-Hema1	0:27:00
4 *H&E-Hema2	0:27:00
5 *PAP-Cytostn	0:33:15
6 *PAS	0:52:30
7 *Mucicarmine	0:32:45
8 *Iron	0:22:00
9 *AB-PAS	0:59:30
10 *Dewax-MT	0:13:00

Step Section:




Step	Reagent	Con.	QC	Time	Limit	Agitate
1	Dry Storage	-	0	00:00	No Max	None
2	Xylene	-	0	03:00	No Max	None
3	Xylene	-	0	03:00	No Max	None
4	Xylene	-	0	03:00	No Max	None
5	Alcohol	100%	0	01:00	No Max	None
6	Alcohol	100%	0	01:00	No Max	None
7	Alcohol	95%	0	01:00	No Max	None
8	Running Water	-	0	01:00	No Max	None
9	Hema 7211	-	0	02:00	Critical	None
10	Running Water	-	0	01:00	No Max	None

The interface includes navigation buttons (up/down arrows) and a 'Save Protocol' button. The bottom status bar shows the time '13:38', date '07/05/2011', and the 'Thermo SCIENTIFIC' logo.

Setup Protocols screen

Protocol Step Properties

Each step comprises a set of properties which can be adjusted independently.

Property	Description
Step	The step number in the protocol. For information only.
Reagent	The reagent used for the selected step. Press the current reagent name and select the reagent to be used for the selected step.
Con	Defines the concentration (%) of the reagent used in the selected step of the protocol. This property is only applicable to certain reagents. To set or change the concentration, press the displayed value and use the number pad to enter the required concentration (0–100).
QC	Sets the usage limit for the reagent to aid Quality Control. Press the displayed value and enter the required usage limit (0–99). The number selected represents how many baskets of 20 slides can enter the pot before it should be replaced with fresh reagent.
Time	Specifies the time (minutes and seconds) that is required for the selected step within the protocol. Press the displayed value and enter the required step time. The maximum allowable time for a step is 59:59.
Limit	<p>Defines whether or not the step time can be exceeded, and if so, by how much. Use this setting to optimise throughput. To set the limit, press the current value to cycle through the following options:</p> <p>Standard - Allows the specified step time to be exceeded by a maximum of 30%.</p> <p>Critical - Allows no tolerance on the specified time.</p> <p> The Critical option should be used sparingly as it will slow down the throughput of baskets by monopolising the arm.</p> <p>No Maximum - Identifies steps where slides can be safely left for extended periods of time, thereby allowing the arm to move other baskets as needed. If a heater station is selected, this property will be automatically set to No Maximum and cannot be altered.</p>
Agitate	<p>Controls the amount of agitation for the selected step. Agitation is not available for the first and last step in a protocol. To set the agitation level, press the current value to cycle through the following options:</p> <p>Initial - Agitates the basket when the slides are initially placed into the reagent pot.</p> <p>Frequent - Agitates the basket when the slides are initially placed into the reagent pot and then at approximately one minute intervals.</p> <p> If a step has an agitate setting of Frequent, then the time displayed is either the time until the next agitate cycle or the time until the step completes - whichever is closer.</p> <p>Continuous - Agitates the basket throughout the step.</p> <p> The Continuous option will significantly reduce the throughput of baskets by monopolising the arm.</p>

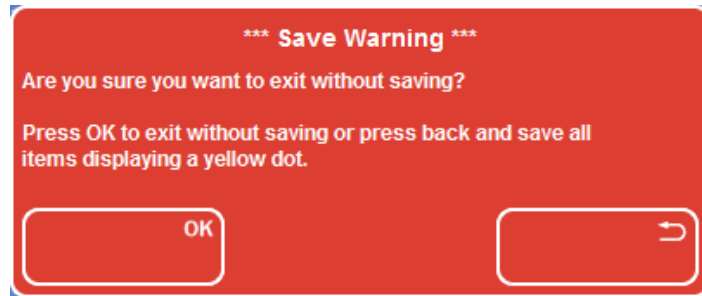
Protocol Status

If a protocol has been recently created or edited, its status will be yellow to indicate that it has not been saved.



There are unsaved changes for protocols 18 and 19

If you press the **Back** button when there are unsaved changes, you will be given the option to exit without saving or go back and save your changes.



Save Warning

Creating a New Protocol

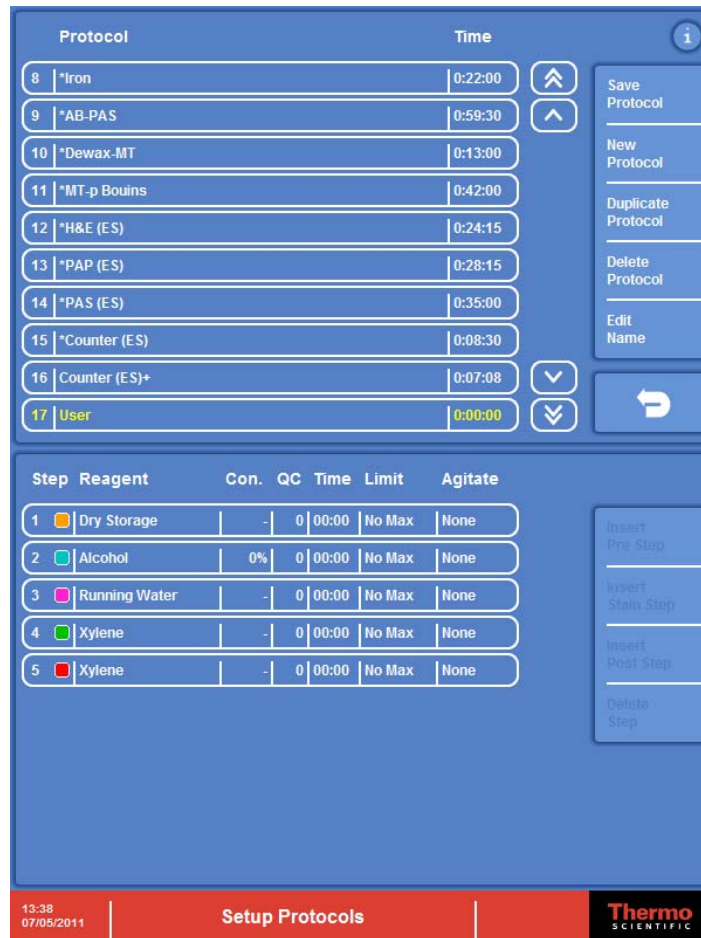
To tailor a protocol to your exact requirements, you must either create a new protocol or copy an existing protocol. When you create a new protocol, it will contain only five basic steps. You must then insert the required steps into the new protocol. See [Inserting and Deleting Protocol Steps](#) and [Editing Protocol Steps](#) for more information.

To create a new protocol:

- On the Setup Protocols screen, press **New Protocol**.

A new 'user' protocol is added to the Protocol list in the top panel of the Setup Protocols screen.

Note that five steps are created by default for the new protocol. These steps are shown in the bottom panel of the screen. Additional steps can be added to create the required protocol. See [Inserting and Deleting Protocol Steps](#).



Adding a new 'user' protocol

Note

It is recommended that you change the name of the protocol from 'User' to something more meaningful to others. See [Changing the Name of a Protocol](#) for details.

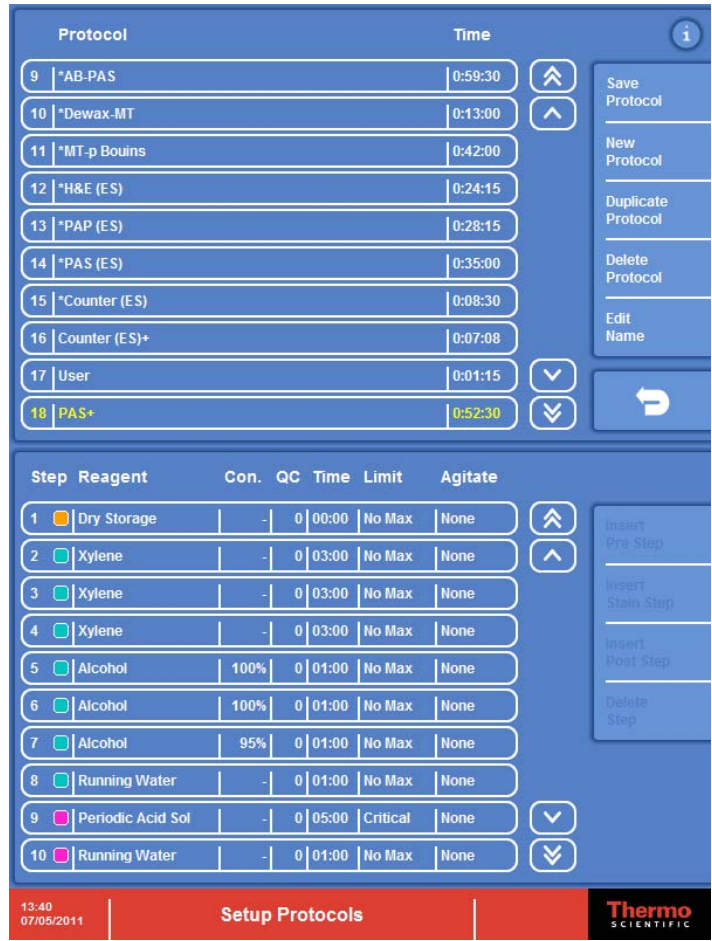
Duplicating an Existing Protocol

An alternative to creating a new 'blank' protocol is to duplicate (copy) an existing protocol. When you copy a protocol, all the steps in the original are copied; you can then amend, add or delete individual steps as required. See [Inserting and Deleting Protocol Steps](#) and [Editing Protocol Steps](#) for more information.

To duplicate a protocol:

- On the Setup Protocols screen, select the protocol that you want to duplicate from the Protocol list.
- Press **Duplicate Protocol**.

A copy of the original protocol is added to the Protocol list appended with a '+' to indicate that it is a copy. The protocol steps for the copied protocol are shown in the bottom panel of the screen; these steps can be changed as required.



A duplicate profile of PAS - identified with a +

Note

It is recommended that you change the name of the copied protocol to something more meaningful to others.

Changing the Name of a Protocol

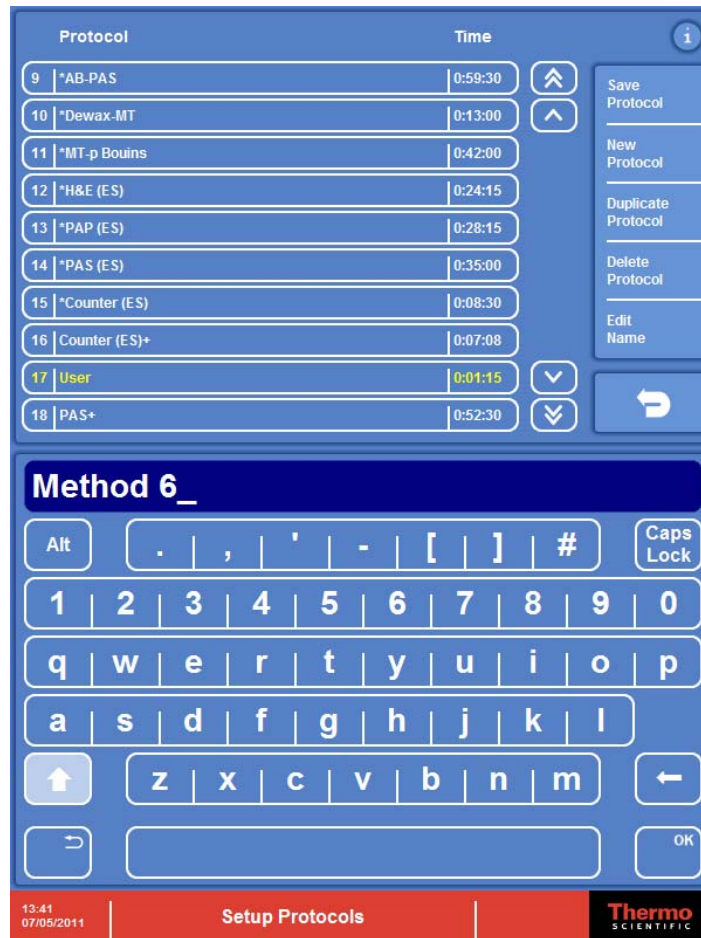
You can change the name of any user-defined or duplicated protocol to make these more easily identifiable to other users.

Note

*You cannot change the names of the pre-defined protocols (identified with a *).*

To change the name of a protocol:

- On the Setup Protocol screen, select the protocol from the Protocol list and press **Edit Name**.



Changing the name of a protocol

- Type the new name using the on-screen keyboard.
- Press **OK** to save the name of the protocol and close the keyboard.
- Press **Save Protocol** if you have no more changes to make to the protocol.

Editing Protocol Steps

Protocols are comprised of five sections—load, pre-stain, stain, post-stain and unload—which are colour-coded on the Setup Protocols screen for easy identification. Provided that you are working with a new or duplicated protocol, you can insert, change or delete steps to achieve the required staining routine. Pre-defined protocols cannot be changed.

To edit a protocol:

- On the Setup Protocol screen, select the protocol from the Protocol list.
The steps in the selected protocol are listed in the bottom panel of the screen.

Protocol	Time
9 *AB-PAS	0:59:30
10 *Dewax-MT	0:13:00
11 *MT-p Bouins	0:42:00
12 *H&E (ES)	0:24:15
13 *PAP (ES)	0:28:15
14 *PAS (ES)	0:35:00
15 *Counter (ES)	0:08:30
16 Counter (ES)+	0:07:08
17 Method 6	0:01:15
18 PAS+	0:52:30

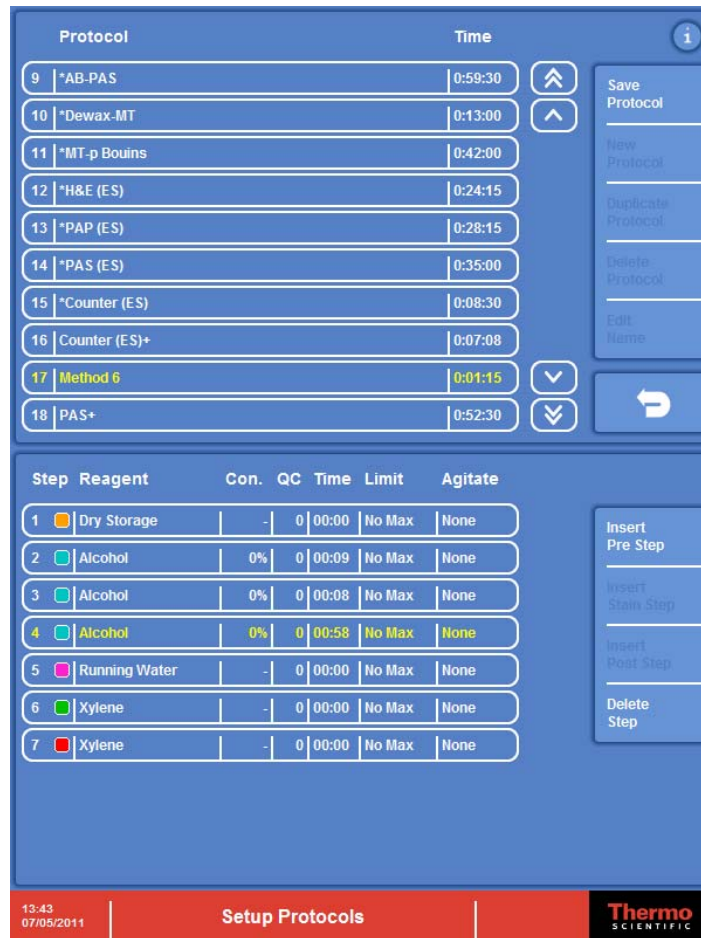
Step	Reagent	Con.	QC	Time	Limit	Agitate
1	Dry Storage	-	0	00:00	No Max	None
2	Alcohol	0%	0	00:09	No Max	None
3	Alcohol	0%	0	00:08	No Max	None
4	Alcohol	0%	0	00:58	No Max	None
5	Running Water	-	0	00:00	No Max	None
6	Xylene	-	0	00:00	No Max	None
7	Xylene	-	0	00:00	No Max	None

Steps for the selected protocol

- Select a protocol step and make the required changes to the reagent, concentration, QC limit, time, step limit and/or agitation settings. Refer to [Viewing Protocol Details](#) for details of these settings. Note that concentration does not apply to all reagents.

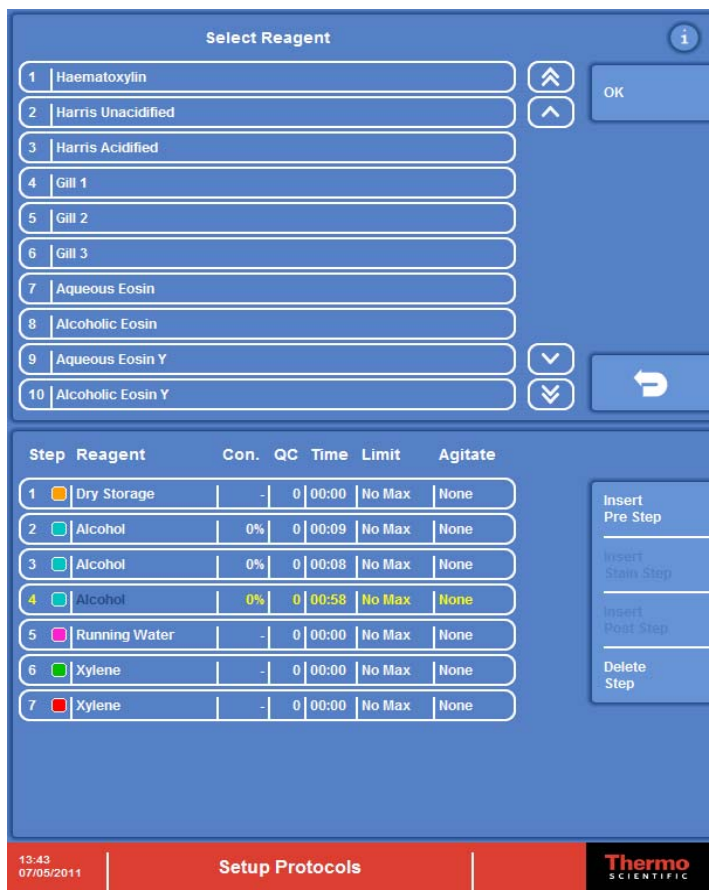


CHANGES TO A PROTOCOL WILL AFFECT ALL PROTOCOL SETS THAT CONTAIN THE PROTOCOL. IF YOU CHANGE THE REAGENT CONCENTRATION, ADD OR DELETE STEPS YOU MUST THEN CHECK THAT ALL PROTOCOL SETS AND LAYOUTS ARE CORRECTED APPROPRIATELY. REFER TO [PROTOCOL SETS](#).



Select the protocol step (Step 4) to be changed

- To change the reagent used for the step, press the existing reagent name to display a list of available reagents (including user-defined reagents) in the top panel of the screen. Use the scroll arrow buttons to move up and down the list and choose the reagent that you want to use. Then press **OK**.



Changing the reagent

- The concentration, QC and time can be changed by a similar process using a number pad.
- Limit and agitate settings can be changed by pressing the current setting to toggle through the available options.
- To insert or delete steps refer to [Inserting and Deleting Protocol Steps](#).
- Press **Save Protocol** when all changes have been made.

Inserting and Deleting Protocol Steps

If you are working with a new or duplicated protocol, you can insert and delete individual protocol steps to create the staining protocol that you require. There must be at least one step per protocol section (load and unload stages are single step) up to a maximum of 50 steps per protocol.

Inserting a Step into a Protocol

Individual steps can be inserted into a selected protocol, as required.

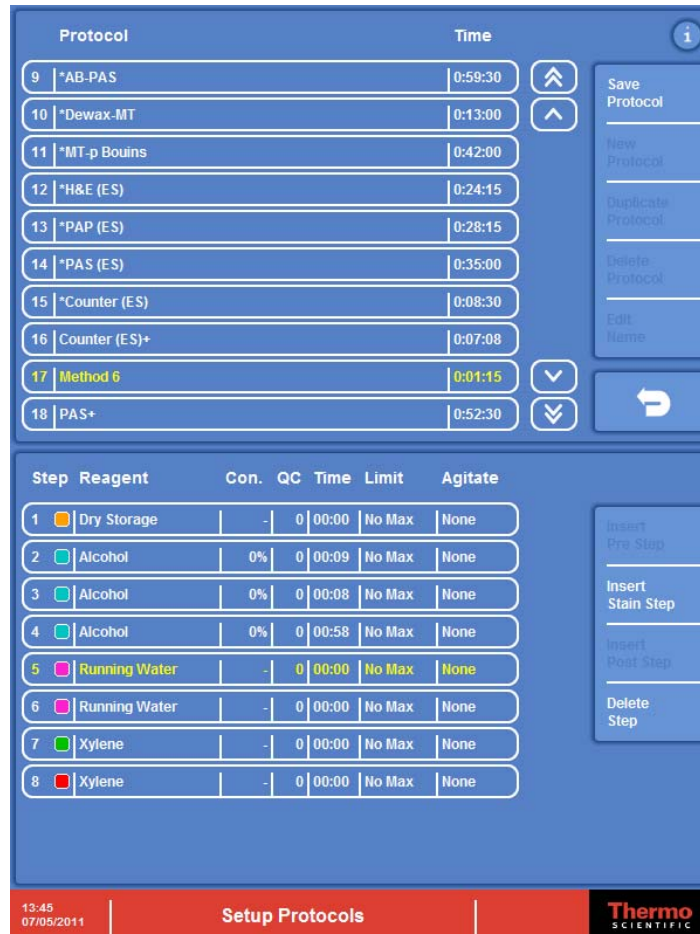
Note

You are not permitted to add additional load and unload steps into a protocol. You cannot insert steps into a pre-defined protocol, since these cannot be changed.

To insert a step into a protocol:

- On the Setup Protocol screen, select the protocol that you want to change from the Protocol list.
The steps in the selected protocol are listed in the bottom panel of the screen.

- Select a pre-stain, stain or post-stain step.
- Press the relevant insert step button to insert a 'duplicated' step into the protocol:
Insert Pre Step if you have a pre-stain step selected.
Insert Stain if you have a stain step selected.
Insert Post Step if you have a post-stain step selected.
- Change the settings for the inserted step, as required. See [Editing Protocol Steps](#) for details.



Inserting steps into a protocol

- Press **Save Protocol**.

Deleting a Step from a Protocol

Individual steps can be deleted from a user-defined or duplicated protocol, as required.

Note

You cannot delete a step from a pre-defined protocol.

To delete a step:

- Select the protocol step that you want to delete.
- Press **Delete Step**.

Note

*The **Delete Step** button is disabled if there is only one step in a protocol section.*

Deleting a Protocol

Protocols that are no longer required or have been created in error can be deleted. You can only delete user-defined or duplicated protocols; pre-defined protocols cannot be deleted.

To delete a protocol:

- On the Setup Protocols screen, select the protocol that you want to delete from the Protocol list.
- Press **Delete Protocol**.

Protocol Sets

To run staining protocols on Gemini AS, they must be combined into a protocol set. Protocol sets can contain up to eight individual protocols each with a specified load and unload door designation. These protocols can also be arranged so that the more popular protocols appear at the top of the list for selection when loading slides. The system allows a maximum of 50 protocol sets to be created.

Note

If the Administrator has enabled access code protection, you will need to enter the correct PIN to gain access to the Setup Sets screen. Refer to [Enabling Access Code Protection](#) for details.

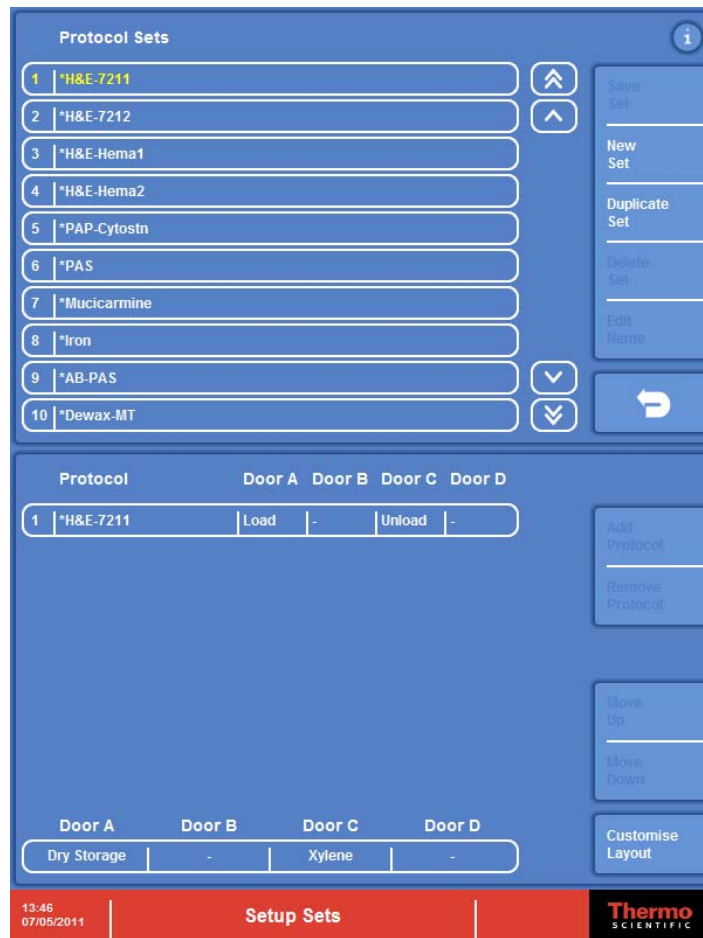
Viewing Protocol Set Details

You can view details of all of the protocol sets that have been defined on the instrument.

To view protocol set details:

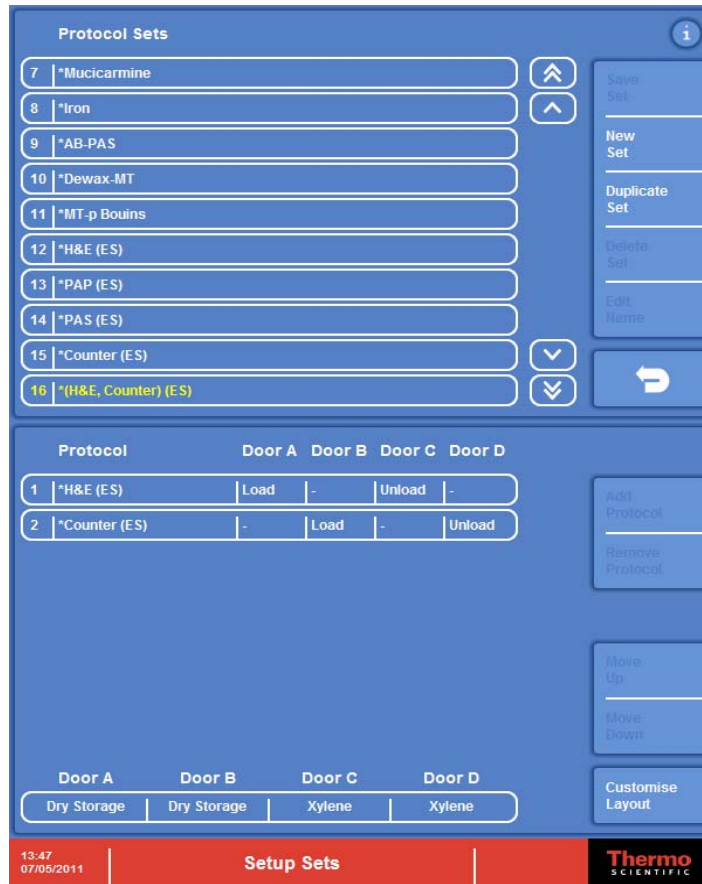
- From the Options screen, press **Back** to display the Start Up screen.
- From the Start Up screen, press **Setup Sets**.

The available protocol sets are listed in the top panel of the Setup Sets screen.



The Protocol Sets list

- From the Protocol Sets list, select the protocol set that you want to review.
A list of the protocols in the selected set is displayed in the bottom panel of the Setup Sets screen.



Protocols in the selected protocol set

Protocol Set Status

If the current protocol set contains a protocol that has been changed after it was placed in the protocol set or the layout of the protocols in the set needs to be checked, the status of the protocol set will be red. Press **Customise Layout** to configure the layout.

If a protocol set has been edited, its status will be yellow to indicate that it has not been saved.



Unsaved changes for Protocol set 1; the layout of User-7 needs to be reviewed

If you press the **Back** button when there are unsaved changes, you will be given the option to exit without saving or go back and save your changes.



Save Warning

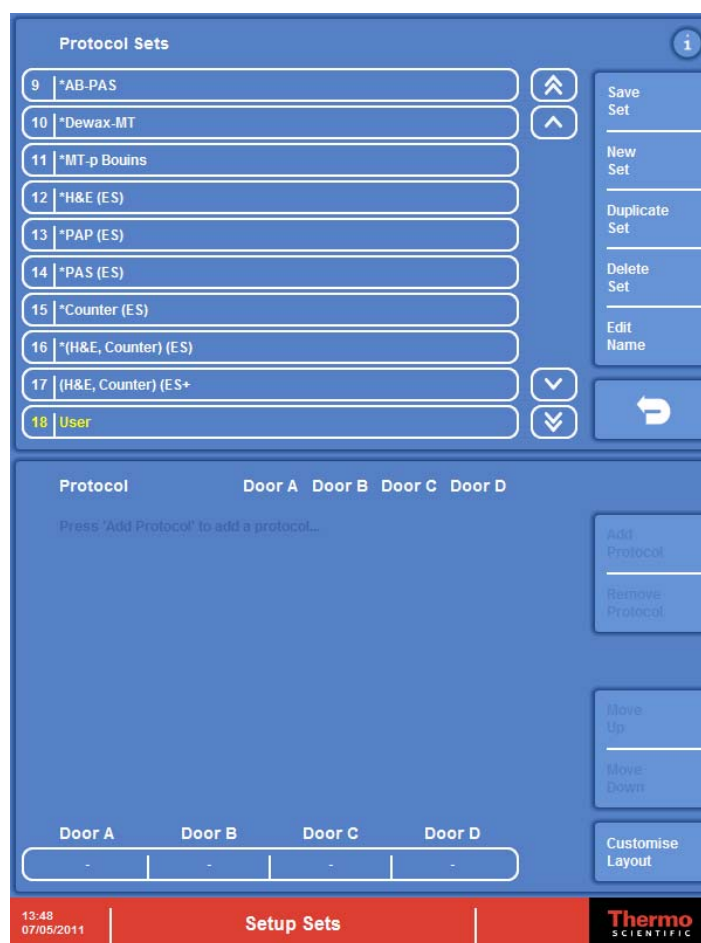
Creating a New Protocol Set

To combine protocols together to meet the requirements of your laboratory, you must either create a new protocol set or copy an existing protocol set. When you create a new protocol set, you must then insert the required protocols into the set and designate the load and unload doors. See [Inserting a Protocol into a Set](#) and [Choosing the Load and Unload Doors](#) for more details.

To create a new protocol set:

- From the Start Up screen, press **Setup Sets**.
- On the Setup Sets screen, press **New Set**.

A new 'user' protocol set is added to the Protocol Sets list.



Adding a new 'user' protocol

Note

It is recommended that you change the name of the protocol set from 'User' to something more meaningful to others. See [Changing the Name of a Protocol Set](#) for details.

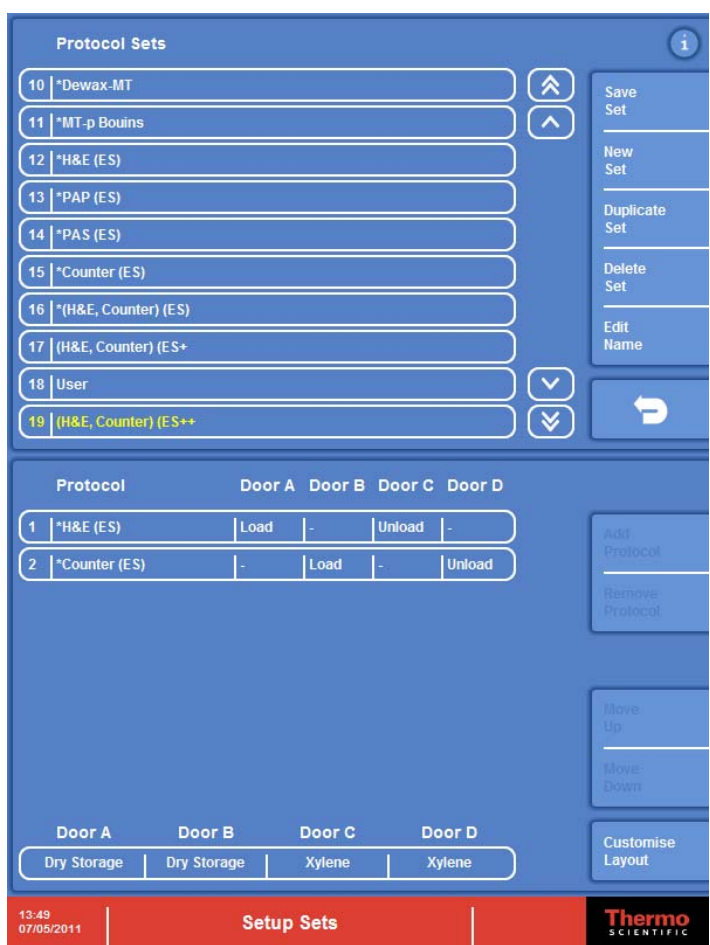
Duplicating an Existing Protocol Set

An alternative to creating a new 'blank' protocol set is to duplicate (copy) an existing protocol set. When you copy a protocol set, all the protocols and door designations in the original are copied; you can then add or delete individual protocols from the set or change door designation, as required. See [Inserting a Protocol into a Set](#), [Removing a Protocol from a Set](#) and [Choosing the Load and Unload Doors](#) for more information.

To duplicate an existing protocol set:

- From the Start Up screen, press **Setup Sets**.
- On the Setup Sets screen, select the protocol set that you want to copy from the Protocol Sets list.
- Press **Duplicate Set**.

A copy of the original protocol set is added to the Protocol Sets list appended with a '+' to indicate that it is a duplicate.



Duplicating a protocol set

Note

It is recommended that you change the name of the protocol set to something more meaningful to others.

Changing the Name of a Protocol Set

You can change the name of any user-defined or duplicated protocol set to make these more easily identifiable on the Protocol Sets list. You cannot change the names of the pre-defined protocol sets.

To change the name of a protocol set:

- From the Start Up screen, press **Setup Sets**.
- On the Setup Sets screen, select the protocol set from the Protocol Sets list and press **Edit Name**.
- Type the new name using the on-screen keyboard.
- Press **OK** to save the name of the protocol set and close the keyboard.

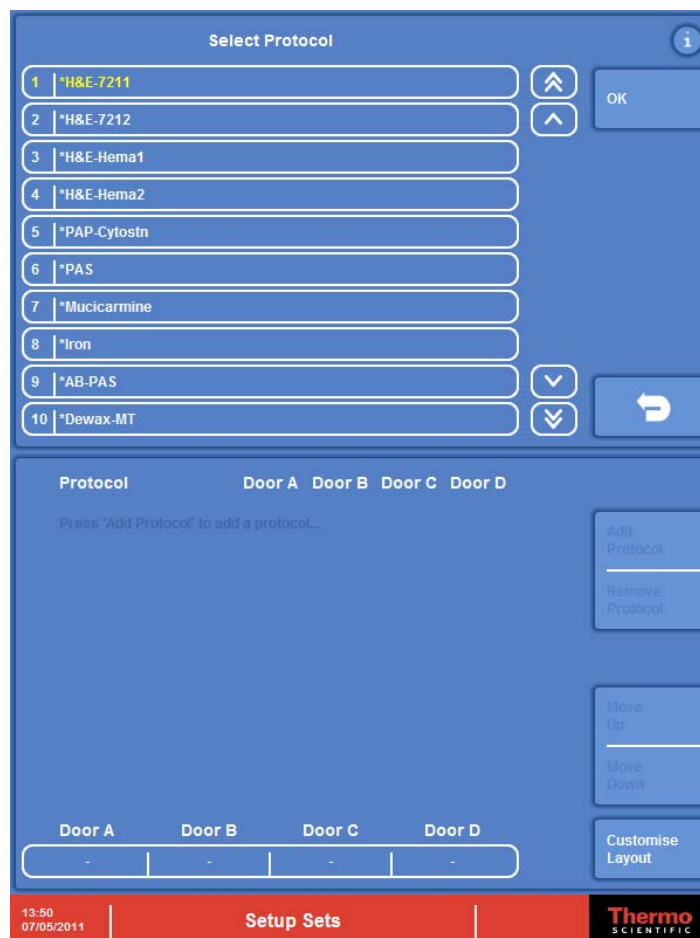
Inserting a Protocol into a Set

To run staining protocols on the Gemini AS , protocols must be combined into protocol sets. The total number of protocols in a set is dependant on whether there is enough space on the instrument and also whether there are no reagent conflicts on the load and unload doors.

To insert a protocol into a set:

- On the Setup Sets screen, select the protocol set from the Protocol Sets list.
- Click in the lower panel of the screen and press **Add Protocol**.

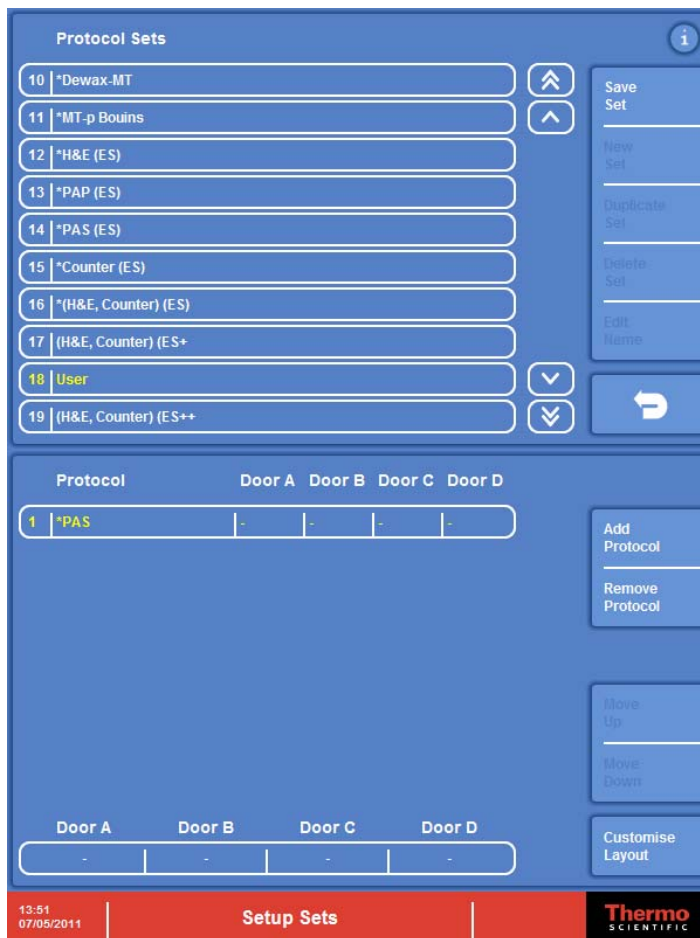
A list of protocols is shown in the top panel of the screen.



Available protocols

- Select the protocol that you want to insert and press **OK**.

The selected protocol is added to the set and displayed in the bottom panel of the screen.



Protocol added to the protocol set

- Add additional protocols to the set, as required. Note that any protocols already added to the protocol set are 'greyed out' on the list indicating that they are already included in the selected protocol set. Protocols that will not fit onto the current protocol set will also be 'greyed out'.
- Press **Save Set** to save changes to the protocol set.

Choosing the Load and Unload Doors

Once you have assigned protocols to a protocol set, you must choose the load and unload positions for the different protocols in the set. However, the ability to designate a door as load or unload depends on the reagents required for the load and unload steps of all active protocols.

The system will not allow you to designate load and unload doors for a protocol set if this results in reagent conflicts. For example, you cannot unload a protocol set from the same door if the unload step for protocol A is xylene and the unload step for protocol B is alcohol. Similarly, you cannot load protocols through the same door if one requires a dry storage load step and another requires a liquid load step.

To define load and unload doors for protocols in a set:

- On the Setup Sets screen, select the protocol set from the Protocol Sets list.

- Press the appropriate door button in the lower panel to set the Load and Unload positions. Pressing each door button lets you cycle through the available settings of 'Load', 'Unload' and '-', which indicates the door has not been assigned for this protocol.

The reagent assigned to the load/unload steps for the selected protocol is displayed at the bottom of the screen.



Assigning load and unload doors for a protocol in the set

- Assign load/unload doors to all protocols in the set.
- Press **Save Set** to save the door designations.

Note

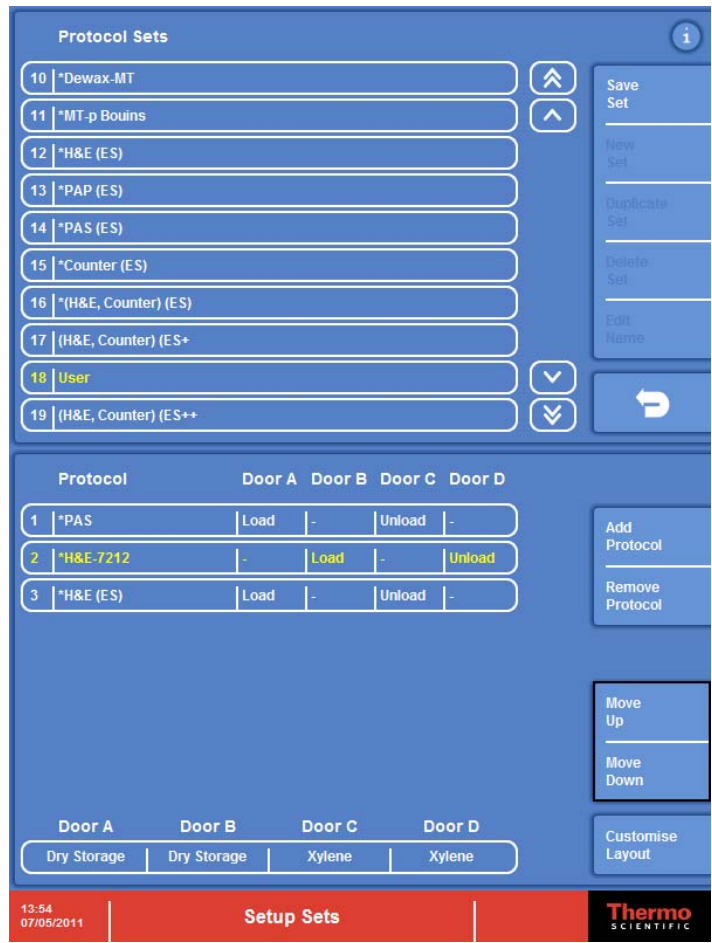
It is possible to set more than one load and unload door for a protocol. Up to eight protocols can share the same load or unload door, providing they have compatible reagents.

Changing the Order of Protocols in a Set

The order of protocols in a protocol set can be changed so that the protocols that are used more frequently appear at the top of the list on the Load Protocol window (see [Loading and Staining Slides](#)).

To change the order of protocols in a set:

- On the Setup Sets screen, select the protocol set from the Protocol Sets list.
- Select the protocol that you want to move.
- Press **Move Up** or **Move Down**, as appropriate.



Moving the selected protocol in the set

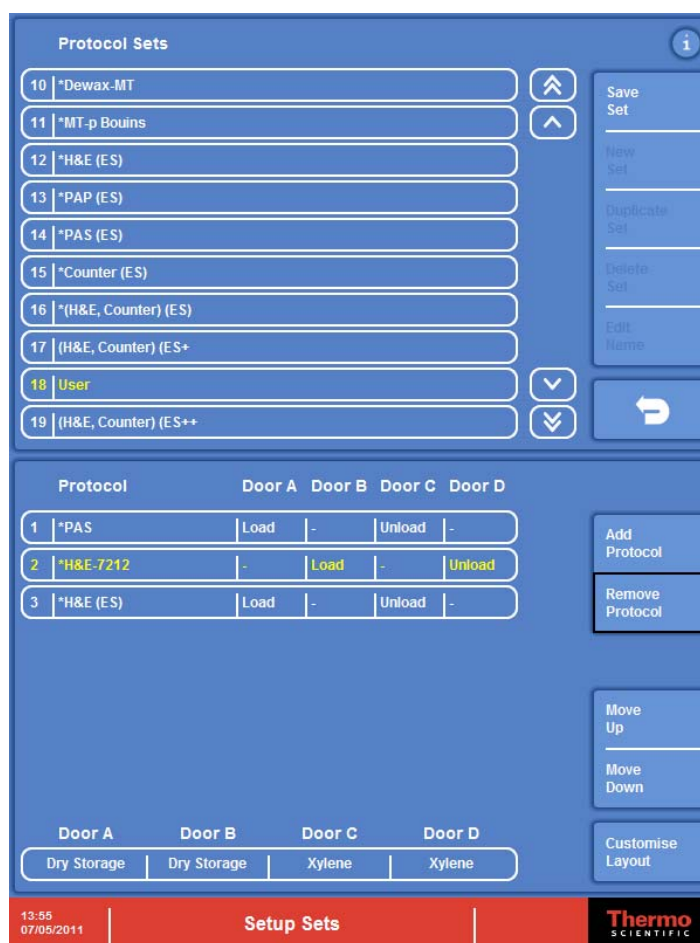
- Press **Save Set** to save the changes.

Removing a Protocol from a Set

Protocols can be removed from a protocol set, as required.

To remove a protocol from a set:

- On the Setup Sets screen, select the protocol set from the Protocol Sets list.
- In the lower panel of the screen, select the protocol that you want to remove from the set.
- Press **Remove Protocol**.



Removing the selected protocol from the set

- Press **Save Set** to save changes to the protocol set.

Deleting a Protocol Set

Protocol sets that are no longer required, or have been created in error, can be deleted. You can only delete user-defined or duplicated protocol sets.

To delete a protocol set:

- On the Setup Sets screen, select the protocol set that you want to delete from the Protocol Sets list.
- Press **Delete Set**.

Reagent Layout

The layout of reagents in the Gemini AS can be changed to optimise the throughput of baskets by duplicating steps to eliminate bottlenecks or by minimising the movement of the arm. It can also allow different protocols to share reagents or remain separate. The layout of reagents can be viewed or changed using the **Customise Layout** option from the Setup Sets screen.



A new protocol set, recently changed protocol set or protocol set with a red status, MUST have its layout inspected, via Customise Layout, before it can be saved.

Viewing Reagent Layout

You can view the layout of reagents used for a selected protocol within a protocol set and, if necessary, optimise these reagents to maximise throughput and efficiency for all protocols in the set.

To view reagent layout:

- On the Setup Sets screen, select the protocol set from the Protocol Sets list.

Customising the layout for the selected protocol

- Press the bottom half of the screen, then select **Customise Layout** to display the Customise Layout screen.

The Customise Layout screen

Note

Reagent pots are colour-coded on the Customise Layout screen to help you identify different reagent types. Red is commonly used for clearants, Blue for dehydrants and Violet for stain-related reagents.

To view reagent pot details:

- On the Customise Layout screen, press a reagent pot.

A pop-up information window is displayed showing the reagent name, and the protocols and steps in which the reagent is used. The Swap Pots and Duplicate Pot functions are also enabled.

Information for pot 1

- To close the pop-up window, press on the reagent pot again.

Adding Duplicates

You can assign duplicate reagents to empty pots to increase the capacity of the instrument. When you do this, the system automatically arranges duplicates in the best positions to maximise throughput. For example, if a protocol has steps that will be a bottleneck for throughput, such as a long step time or a low maximum QC value, then a duplicate reagent pot can be added so that the Gemini AS can choose either pot when scheduling baskets. A protocol step can have up to eight duplicates.



Heater stations and water wash stations cannot be duplicated.

To add duplicates:

- From the Customise Layout screen, press the reagent pot that you want to duplicate.
- Press **Duplicate Pot**.



A duplicate of pot 13 in position 21

Removing Duplicates

You can remove duplicated reagent pots to free up space for extra protocols, as required.

Note

*To remove a specific duplicate from the layout, select the duplicate and press **Delete Pot**.*

To remove duplicates:

- From the Customise Layout screen, press **Remove Duplicates**.
All duplicates are removed - only one pot of each reagent is left.

Swapping and Moving Pots

Each reagent pot can be moved within the layout, as required.

To swap two pot positions:

- From the Customise Layout screen, press the first reagent pot to be swapped.
- Press **Swap Pots**.
- Press the second reagent pot.
The pot positions will be swapped.

To move a pot:

- Follow the same procedure as for swapping pots, but choose an empty pot for the second pot position.

Optimising a Layout

Optimising a layout rearranges existing reagent pots so that they are in the best positions for optimum performance.

To optimise a layout:

- From the Customise Layout screen, press **Optimise Layout**.

Allocating Duplicates

Allocating duplicates assigns duplicate reagents to empty pots to maximise throughput based on the QC values for each protocol step.

Note

*This option first removes any existing duplicates before automatically allocating the optimum number of duplicates for the current protocol set. To retain manual control of reagent duplication, use the **Duplicate** button instead. See [Adding Duplicates](#) for details.*

To allocate duplicates:

- From the Customise Layout screen, press **Allocate Duplicates**.

Sharing Control

Sharing control allows you to specify which reagent pots can be used for specific steps in protocols. Specifically, it allows particular protocol steps to be assigned unique reagent pots in order to prevent contamination and allows common reagents to be shared by more than one protocol.

Note

*The settings defined on the Sharing Control screen will dictate, to some extent, the efficiency of the **Urgent Start** option.*

The Sharing Control screen is accessed from the Customise Layout screen by selecting a pot and pressing **Sharing**. There are three different versions of the Sharing Control screen depending on the selection made on the Customise Layout screen:

- Reagent Sharing Control.
- Water Wash Sharing Control.
- Heater Station Sharing Control.

These screens share some common features:

- Reagent / Water Wash / Heater identification type.
- Protocol details and the protocol steps that use the selected Reagent / Water Wash / Heater stations.
- Reagent groups.
- Pot numbers.
- Selection markers.

Reagent Sharing Control

The Reagent Sharing Control screen appears if one of the 26 reagent pots is selected when the **Sharing** button is pressed on the Customise Layout screen. It is used to control which protocols share reagent pots and also to prevent protocols from sharing common reagents in a section. The matrix shows the pots that contain the selected reagent and the steps to which they are assigned for all active protocols. Only identical reagents in any one section will be displayed (Pre-Stain, Stain or Post-Stain).

A reagent group will contain a single pot number, or up to eight pot numbers if the reagent group has duplicates. If there are any unused pots on the instrument that could be used as a new group member, then they will be shown as a reagent group with no associated pot number.

Usage of reagent groups per protocol and per protocol step can be controlled by pressing the touchscreen to enable or disable the appropriate selection markers.

Water Wash Sharing Control

The Water Wash Sharing Control screen appears if one of the water wash stations is selected when the **Sharing** button is pressed on the Customise Layout screen.

The touchscreen can be used to enable or disable the appropriate selection markers to control:

- The water wash pots used by each protocol.
- The water wash pots used for each step within a protocol.

Note

The water wash pots are split into two groups (W1-W3 and W4-W6), filled separately. Water wash pots are not filled individually.

Heater Station Sharing Control

The Heater Sharing Control screen appears if one of the heater stations (H1-H5) is selected when the **Sharing** button is pressed on the Customise Layout screen.

- On a non-heated instrument, these positions are used as a dry storage buffer to allow multiple procedures to be loaded through the same door in quick succession.
- On a heated instrument, the heater positions can be selected or de-selected for different protocols.

The touchscreen can be used to enable or disable the appropriate selection markers to control the heater station or dry storage positions used for each protocol.

Reagent Management

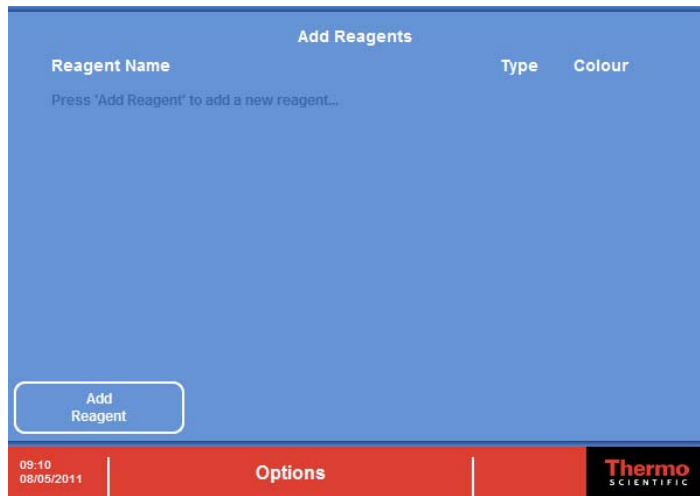
Gemini AS is supplied with a pre-installed reagent list which can be used to create your own staining protocols. If you want to stain slides using reagents that are not included as standard, you can add a new custom reagent and then create the appropriate staining protocol. Up to 20 custom reagents can be added.

Adding a Reagent

New reagents can be added to Gemini AS, as required. When you add a reagent, you must provide a name and define the type of reagent so that it can be used at an appropriate place in a protocol and be loaded in the correct sequence.

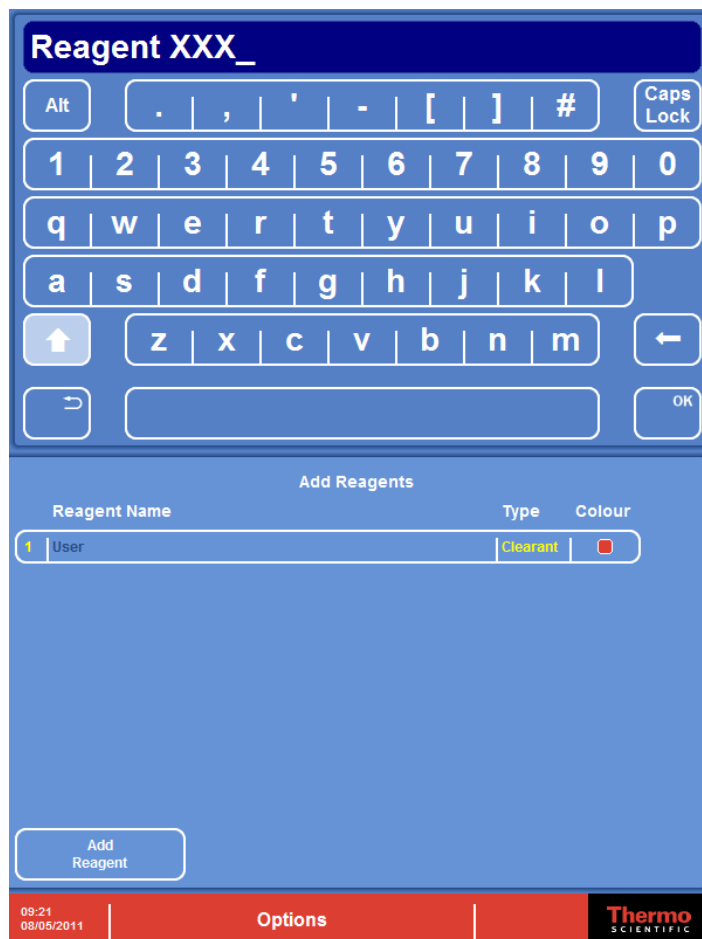
To add a reagent:

- From the Options Menu screen, press **Add Reagents** to display the Add Reagents screen.



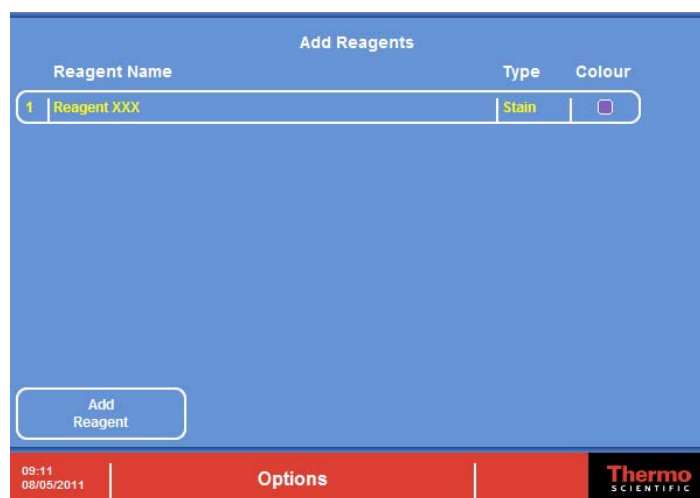
The Add Reagents screen

- Press **Add Reagent** to create a new reagent with a default name (User) and type (Clearant).
- Select the new reagent and press the reagent name to change its name. Use the keyboard to enter the new name and press **OK**.



Changing the reagent name

- To change the reagent type, press on the current type until the correct type is displayed. Note that the reagent's colour identifier changes as you choose a different type.



A new staining reagent

- Close the Options Menu screen when you have completed adding reagents.

Changing the Name of a Reagent

You can change the name of an existing 'user' reagent, as required.

Note

Changing the name of a reagent is an alternative to creating a new reagent if you have reached the maximum number allowed. However, ensure that the reagent is of the correct type before you change its name so that it is displayed in the correct colour on the Stain screen (blue for dehydrants, red for clearants and violet for stain-related reagents).

To change the name of a reagent:

- From the Options Menu screen, press **Add Reagents** to display the Add Reagents screen.
- Select the required reagent and press the reagent name to change its name.
- Use the keyboard to enter the new name and press **OK**.

Note

When you change the name of a reagent, its name is automatically changed in any protocols which include that reagent.



DO NOT CHANGE A REAGENT 'TYPE' IF IT CURRENTLY USED IN A PROTOCOL AND PROTOCOL SET.

Quality Control

To maintain the quality of processing, Gemini AS can be configured to display reagent usage warnings to alert an operator that particular reagents need to be changed. Usage limits can be applied to any of the reagents used in a particular protocol and the entered value represents the number of baskets that can be used in a pot of reagent before the contents of the pot need to be replaced. Refer to [Editing Protocol Steps](#) for more information on setting quality control values for protocol steps.

Extraction filter life can also be tracked. When the filter has reached its maximum working time, a filter icon appears in the information area, next to the Thermo Scientific logo in the corner of the screen. Changing the filter and resetting the filter life counter, from the Options Menu, clears the alert icon from the screen.

Reagent Usage Alerts

Reagent usage alerts can be enabled to provide visual warnings of when particular reagents need to be changed. The number of uses for a particular reagent is set when a protocol is defined. See [Viewing Protocol Details](#) and [Editing Protocol Steps](#) for details of how to set quality control limits for reagents.

To change reagent usage alerts:

- From the Options Menu screen, press **Misc. Options**.
- Set the Reagent Usage Alerts to **On** or **Off**.

Setting the Filter Change Interval

To maximise the useful life of the instrument's extraction filter, you should define the filter change interval. When the filter reaches its maximum working time an alert icon is displayed on the screen indicating that the filter needs to be changed. Refer to [Responding to Quality Control Alerts](#) for details.

Note

If you replace the filter when the instrument is switched on, the alert icon is cleared automatically. If the filter is replaced when the instrument is switched off, the filter alert must be reset manually.

To set the filter change interval:

- From the Options Menu screen, press **Misc. Options**.
- Set the Filter Change Interval to the required value.
- The filter usage count can also be reset, if required.

Chapter 5 - Cleaning and Maintenance

This chapter describes how to clean and maintain your Gemini AS instrument.

Read this chapter to learn about:

- Cleaning safety.
- Daily and weekly cleaning tasks.
- Cleaning reagent and heater station pots.
- Cleaning and calibrating the touchscreen.
- Changing the filter.

Cleaning Safety

Normal standards of laboratory hygiene and routine maintenance procedures are all that is necessary to keep the Gemini AS in good and serviceable condition.

Before using any cleaning or decontamination method, except those recommended by the manufacturer, check with the manufacturer that the proposed method will not damage the equipment.



Inspect the instrument for obvious damage or wear whenever you clean or use it.



Turn the instrument off and disconnect it from the mains supply before cleaning.



Always wipe up any spills immediately. In the event of a major spillage, disconnect the instrument from the mains supply without delay and do not reconnect and switch on until the instrument has been thoroughly dried out and checked by a Service Engineer.



If hazardous material is spilt on or inside the instrument, you must carry out the appropriate decontamination.



Do not use abrasive compounds or metal components to clean the Gemini AS or its components and accessories.



Always take the necessary safety precautions when you clean or decontaminate the Gemini AS to protect yourself against the effects of chemicals.



Potential lethal voltages are present inside the instrument - do not remove any access covers.



Spillage of stains on the touchscreen should be immediately cleaned using a soft cloth and a small amount of alcohol.



As with all scientific equipment, due care and good laboratory practice must be employed when dealing with chemicals, and consideration must be given to the potential for hazard when dealing with particular chemicals. Wear gloves or other PPE if required.

Daily and Weekly Cleaning Tasks

To ensure the Gemini AS offers continuous safe and reliable operation, regular cleaning is required. Ensure that all components and accessories are completely dry before use.



When you clean the Gemini AS, do not use excessive amounts of water as this can damage the instrument.



Do not use detergents which contain more than 10% bleach to wash the inside of the instrument or the pots, baskets or carriers.



Always wipe up any spills immediately. In the event of a major spillage, disconnect the instrument from the mains supply without delay and do not reconnect and switch on until the instrument has been thoroughly dried out and checked by a Service Engineer.

Daily Cleaning

Remove any spills with clean soapy water and dry with a clean dry cloth.



Any accidental spillage of stains on the touchscreen should be removed immediately by wiping with alcohol.

Weekly Cleaning

Remove all reagents and reagent pots. Clean thoroughly inside and out using warm soapy water and a damp cloth. Dry the instrument with a clean, dry cloth. The drainage hose should be cleaned with a 10% commercial bleach solution in water.

Waste Reagents

Always dispose of waste reagents safely. Wear gloves or other PPE, if appropriate.



Do not pour waste reagent into the public drain without approval from your local waste water authority.

Cleaning the Reagent and Heater Station Pots

The plastic reagent and water wash pots supplied with the instrument are suitable for use with most solutions and reagents used in the staining process. Solutions containing iodine may be used in the pots, although aging is accelerated and the pots will need to be replaced at approximately six monthly intervals.

To clean the pots, wash in warm soapy water and rinse well. Dry with a clean dry cloth. The pots, baskets and carriers should be washed at a maximum temperature of 45°C. The pots can also be cleaned in a dishwasher at a maximum temperature of 95°C.

Use an appropriate wax removing solvent to clean away all the traces of wax from the heater station pots. Wear gloves or other PPE if applicable.

Cleaning the Touchscreen

The touchscreen should be cleaned using a soft dry cloth and a small amount of alcohol.



Do not use an abrasive cloth as this will cause damage to the touchscreen.

Lock the touchscreen before cleaning to prevent accidental key-presses.

To lock the screen:

- Press and hold the Thermo Scientific logo in the bottom right-hand corner of the screen for 5 seconds until the lock icon appears.

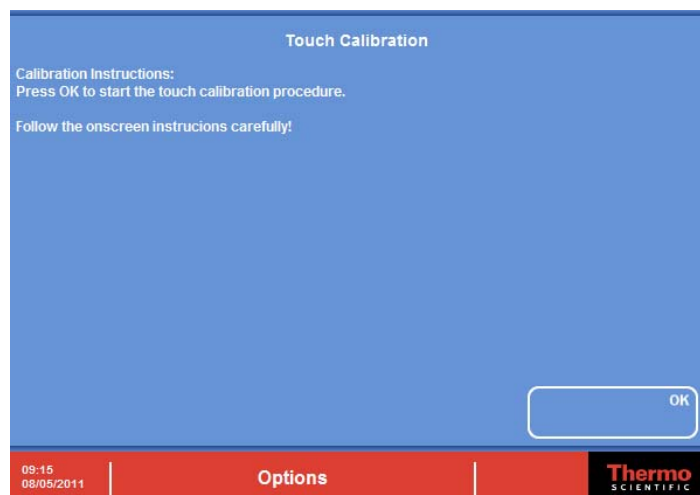
*The lock icon***To unlock the screen:**

- Press and hold the Thermo Scientific logo in the bottom right-hand corner of the screen for 5 seconds until a lock icon disappears.

Calibrating the Touchscreen

To calibrate the touchscreen:

- From the Options Menu screen, press **Touch Calibration** to display the Touch Calibration screen.

*The Touch Calibration screen*

- Press **OK** to start.
- Follow the instructions shown on the screen.
- Press the **Back** button or another Option button when calibration is complete, or press **OK** to repeat the calibration procedure.

Changing the Filter

It is recommended that the filter is changed every three months. To change the filter, see [Fitting the Filter](#) for instructions. When replacing the filter, dispose of the used filter in accordance with local regulations and procedures.

Note

To maximise the useful life of the instrument's extraction filter, the filter change interval should be defined. When the filter reaches its maximum working time, an alert icon is displayed on the screen indicating that the filter needs to be changed. See [Setting the Filter Change Interval](#) for details.

Chapter 6 - Troubleshooting

This chapter describes how to troubleshoot problems that may occur when using Gemini AS.

Read this chapter to learn how to:

- Deal with instrument malfunctions, should they occur.
- Respond to warning messages.

General Troubleshooting

Correct service and maintenance is essential for the long term serviceability of the Gemini AS.



To ensure safety, reliability and consistency of performance, only a qualified Thermo Fisher Scientific Service Engineer should set up, service or repair the Gemini AS instrument.



Only an authorised technician should replace instrument fuses.

Common Problems and Solutions

Symptom	Possible Cause	Solution
Touchscreen is OFF but mains and battery switches are ON.	Mains fuse blown.	Replace the mains fuse.
Arm does not move.	Main door is open.	Make sure both main doors are closed.
Touchscreen does not respond to touch.	Touchscreen is locked.	If the locked screen icon is displayed in the information area (next to the Thermo Scientific logo), press and hold the Thermo Scientific logo until the icon disappears (about 5 seconds).
Touchscreen does not respond to touch.	Touchscreen is faulty.	Call the Service Department.

Warning Messages

The instrument may display warning messages during routine operation.

Message	Indicates that:
Door Open	One or both of the main access doors are not properly closed, or the interlock switch is faulty.
Battery Low	The battery is not charging as it should.
Door Override	One or more of the load / unload doors has been deactivated.
Heater Failure	One or more of the heater / holding stations is not functioning. The faulty station number will be displayed after the error message.



If error messages appear and the fault is not known, contact Thermo Fisher Scientific's Service Department.



Do not attempt to fix mechanical or electrical faults unless suitably qualified to do so.

Motor Assembly Faults

If an obstruction inhibits the movement of the main arm, the instrument will halt operation and the Motor Assembly Fault Warning screen will appear.



Do not switch off the power supply.

The procedure for clearing motor assembly faults is as follows:

- Open the main access door and remove any obstruction.
- Follow the on-screen instructions precisely.



Ensure all doors are closed before attempting to reposition the arm.

Appendices

The appendices provide additional information about your Gemini AS instrument.

Read the appendices to get more information on:

- Spares and accessories.
- Fitting the optional vent kit.
- Approved reagents.
- Shutting down the instrument.
- Repacking your instrument for transportation.

Appendix A - Spares and Accessories

The spares and accessories for Gemini AS are listed in the following table:

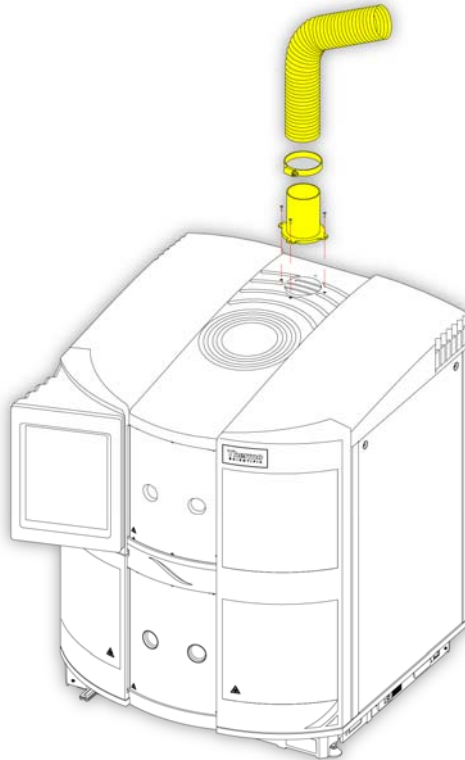
Description	Quantity	Part Number
Basket/Carrier (Each holds 20 slides)	5	A78010466
Basket Adapter for large slides. Slide sizes up to 75 x 58 mm (2 in x 2¼ in)	10	A78010510
Carrier for Sakura Basket	5	A78010404
Charcoal Filter	1	9990610
320 ml Reagent Pot	3	A78010487
Reagent Pot Cover - Multi-Pot	4	A78010488
Reagent Pot Cover - Single Pot	6	A78010489
Vent Adapter Kit	1	A81510031
Water Wash Pot	1	A78010201
Water Wash Inlet Hose	1	AP14160
Gemini AS Baskets - Black Sliders (ClearVue Compatible)	5	A79210064
Gemini AS Baskets - White Sliders (ClearVue Compatible)	5	A79210065
Reagent Dispense Station	2	A81510032
Gemini AS Stand	1	A81510033
USB Memory Stick	1	A81510034
Static Water Wash Station Kit	1	A78010226

Appendix B - Fitting the Vent Kit

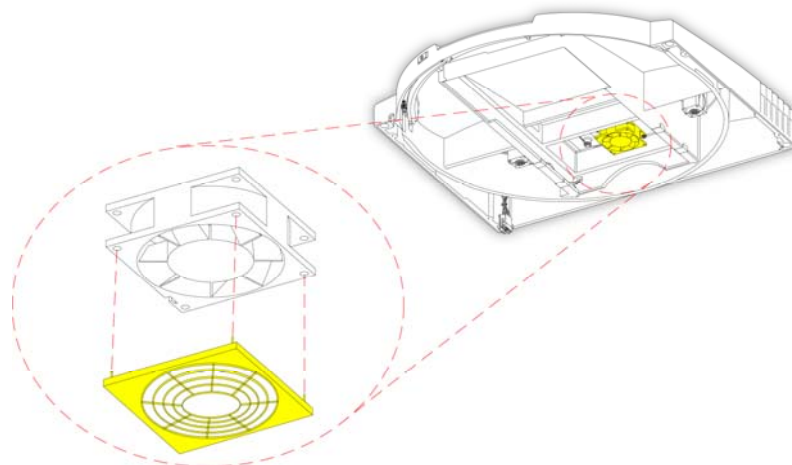
An optional vent kit is available to allow any fumes to be extracted from Gemini AS into a fume cupboard or vented to the outside atmosphere. The maximum air-flow rate is 58 m³ per hour.



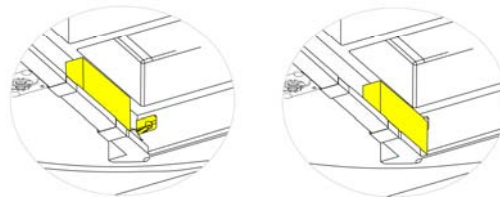
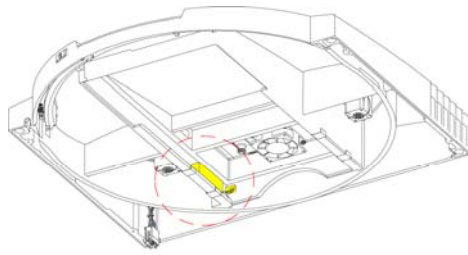
The vent kit should not be used to extract fumes via the building Heating, Ventilating, and Air Conditioning (HVAC) system or through a common site extraction system.



Step 1: Fit the flexible ducting over the mounting bracket and secure using the clip provided. Fix the mounting bracket to the Gemini AS top cover over the fan outlet grille using the four screws and gasket provided.



Step 2: Remove the filter (if fitted) from inside the Gemini AS top cover. Attach the fan guard to inlet side of the extractor fan by firmly inserting the plastic lugs into the holes at the corners of the fan.



Step 3: Use the rectangular block (provided in the kit) provided to activate the filter sensor by fitting the block as shown. Ensure that the rectangular block is securely located at the back of the filter channel otherwise it will not activate the filter sensor.



ENSURE THAT THE FILTER LIFE WARNING ON THE USER INTERFACE IS SWITCHED OFF.

Appendix C - Approved Reagent List

The following table lists the reagents which Thermo Fisher Scientific has approved for use with Gemini AS.

Contact your Thermo Fisher Scientific dealer before using any non-approved reagent.



Use of non-approved reagents may result in damage to the instrument or samples. Before filling this instrument with reagents, refer to the '[Chemical Safety](#)' section of this Operator Guide.

Approved Reagents

Reagent	Comments
Xylene	
Toluene	
Xylene Substitute	Xylene Substitute, Clear-Rite 3
Industrial Methylated Spirit (IMS)	Up to 5% Methanol in Ethanol
Reagent Alcohol	5% Methanol and 5% Isopropanol in Ethanol
Isopropanol (IPA)	
Acid Alcohol	1% HCl in 70% Ethanol
Acid Alcohol	10% Glacial Acetic Acid in 70% Ethanol
Clarifier 1 and 2	
Nu-Clear 1 and 2	
Eosin	Aqueous and Alcoholic
Haematoxylin	
EA-36/50/65	
OG6	
Phosphotungstic Acid	1% in Water
Ammonia Water	1% Ammonium Hydroxide in Water
Bluing Reagent	
Water	
Schiff's Reagent	
Periodic Acid	

Approved Cleaning Reagents

Sodium Hypochlorite (10% in Water).

Appendix D - Shut Down Procedure

If the instrument is not going to be used for a long period of time, or is to be moved it should be shut down.



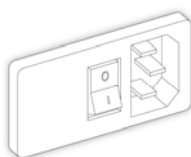
Ensure that there are no running batches. The reagents should be removed and water wash emptied to ensure that the drain hose is empty.



Do not pour waste reagent into the public drain without approval from your local waste water authority.

To shut down Gemini AS:

- Press the **O (OFF)** side of the mains power switch.

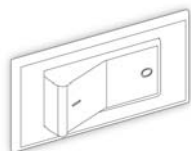


Turning the power off

Note

If the instrument is to be moved or turned off for a long period of time, ensure that the battery switch is also turned off.

- Press the **O (OFF)** side of the battery power switch.



Turning the battery off

Appendix E - Transportation Instructions

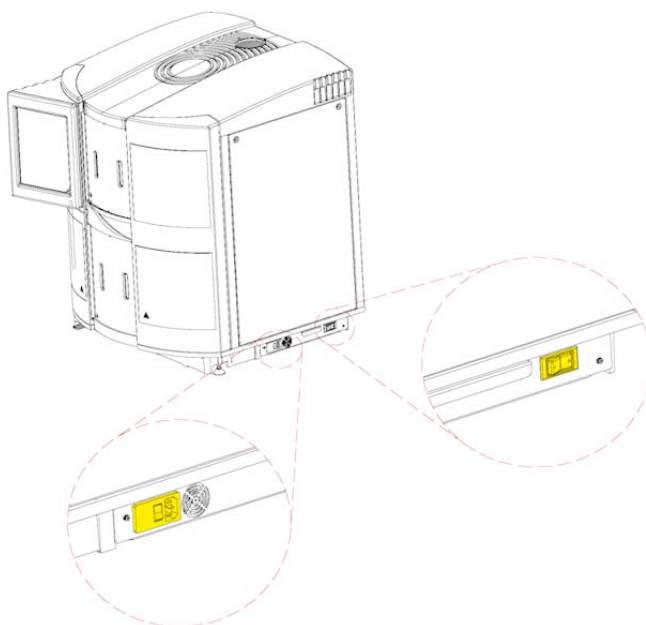
If for any reason it becomes necessary to transport the Gemini AS to another location or to return it to Thermo Fisher Scientific, the following packing instructions should be used.

- Ensure the Product Return Safety Declaration Certificate has been filled out in full.
- Empty, clean and dry the Gemini AS before starting to re-pack.
- Always dispose of waste reagents safely. Wear gloves or other PPE if appropriate.



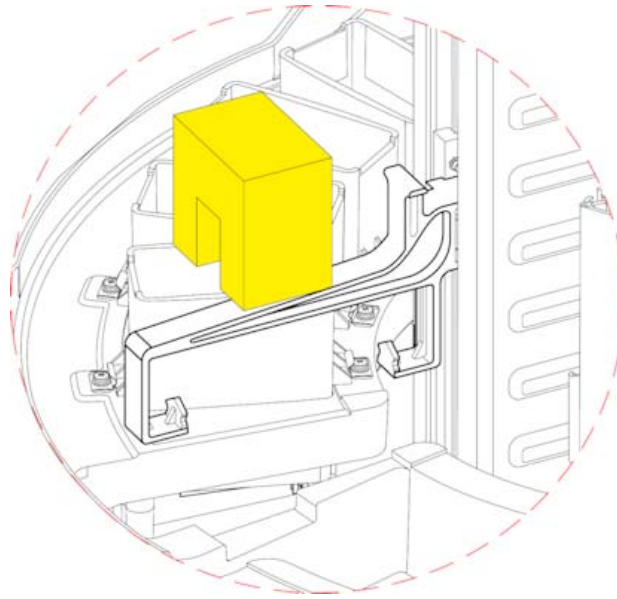
Do not pour waste reagent into the public drain without approval from your local waste water authority.

- Switch both rocker switches to the **O (OFF)** position and unplug the lead from the main power source.



Switching off the instrument

- Position the hook so that it rests in the slot between the W3 and H1 positions in the top deck. Use the U-shaped foam piece to cover the hook and push it firmly into the slot to prevent rotation.

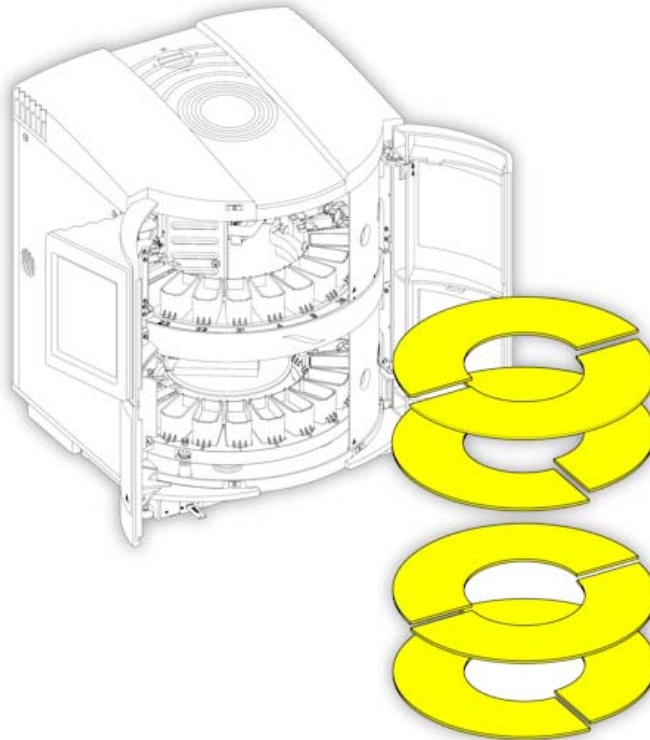


Securing the hook

Note

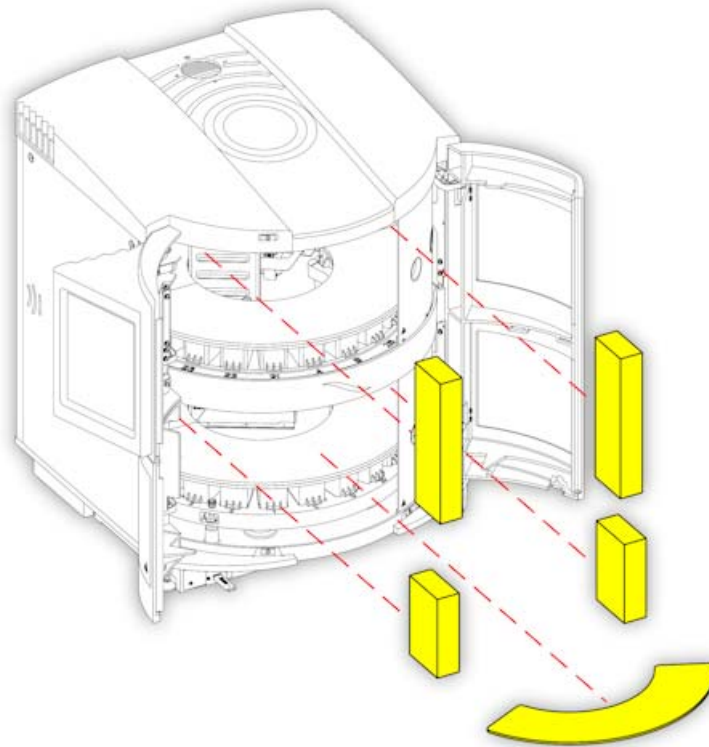
The following 2 steps regarding the arrangement of pots within the instrument are optional.

- Place a basket and carrier into pots 4, 5, 6, 15, 16 and 17 on the lower deck and W2, W3, W4 and W5 on the upper deck (10 in total).
- Place the 4 multi-pot lids in 2 piles on top of the lower level pots.
- Arrange 4 of the semi-circular pieces of card over the pots on the upper and lower deck and around the central column. Each pair should be at 90° to each other.



Installing the card pieces

- Wedge the 4 foam blocks between the top of the card and the upper deck and lower deck.

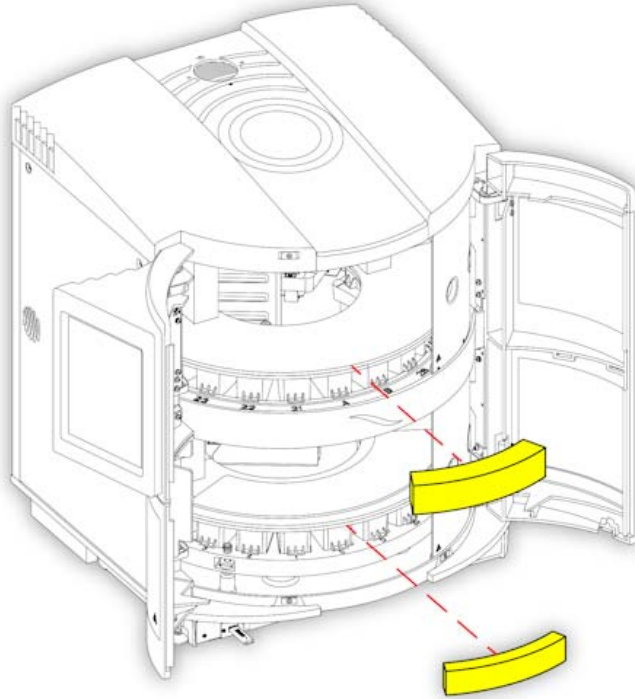


Positioning the foam blocks

Note

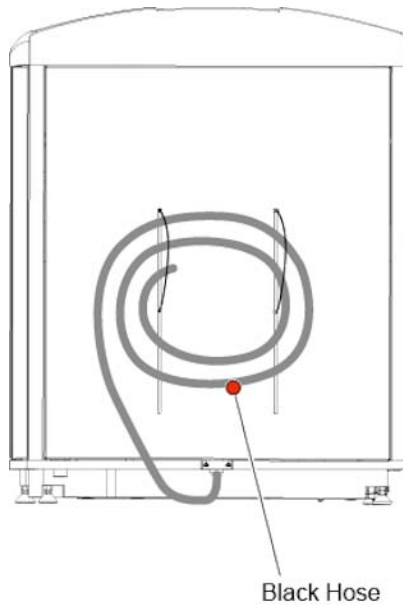
The following 3 steps regarding the arrangement of pots within the instrument are optional.

- Place the 3 spare pots into a plastic bag (place them in line with each other inside the bag).
- Place the 6 small pot lids into 2 polythene bags (3 in each) and place into the bag with the pots.
- Tie wrap the bag containing the 3 pots and trough lids to one of the lower deck cardboard pieces inside the unit.
- Close the main access doors and ensure that the load/unload doors are in the central position. Wedge the remaining 2 foam blocks between the sliding doors and the upper layer of pots and between the sliding door and the lower turntable.



Positioning the remaining foam blocks

- Coil the black hose and fix it to the rear of the instrument using cable ties at the top fixing points.



Storing the hose

Note

The following step regarding the arrangement of the hose on the instrument is optional.

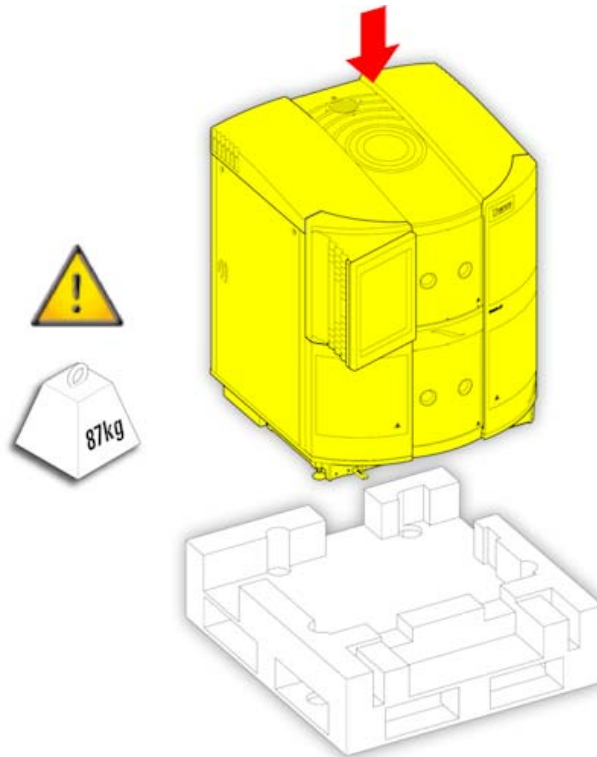
- The blue inlet hose and jubilee clip should be placed in a bag and positioned at the rear of the instrument.
- The instrument should then be wrapped in cling film to secure the bag and to prevent the doors from opening.

- Perform 3 full circuits of the instrument with the cling film starting at the top front and finishing at the bottom front.



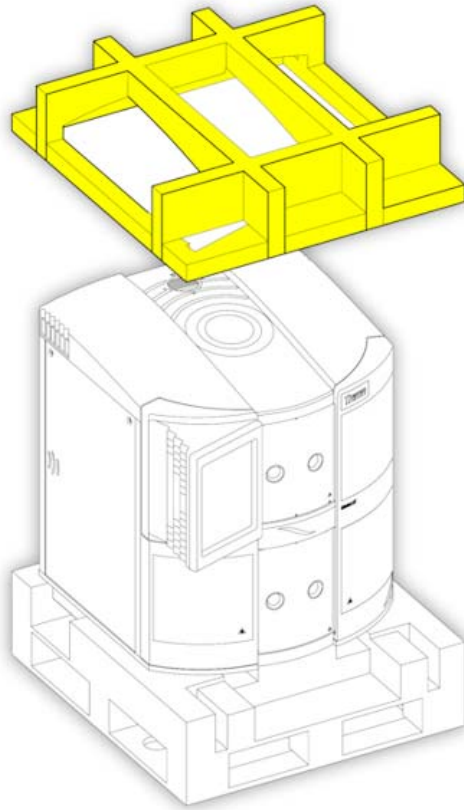
The Gemini AS is heavy (87 kg (192 lb) with all pots fitted). Take the necessary Health & Safety advice before moving and lifting the instrument onto its wooden base.

- Place the Gemini AS onto the wooden base.



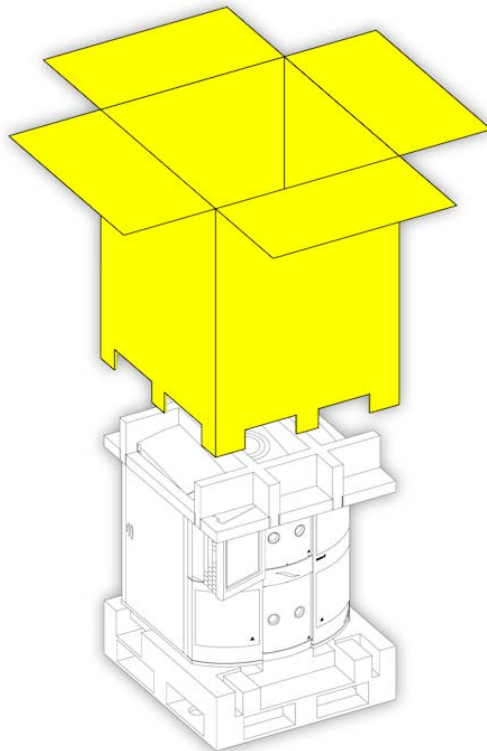
Placing the instrument on its base

- Place the inner upper packaging on top of the instrument.



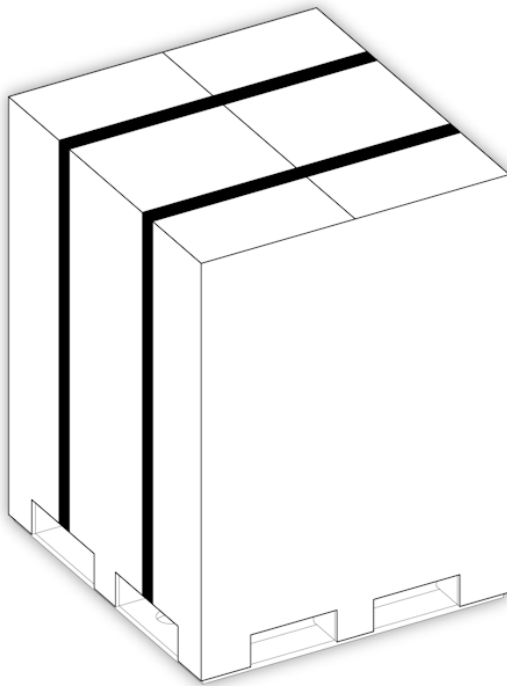
Inner upper packaging

- Place the outer packaging over the instrument.



Outer packaging

- Secure the cardboard over-shipper to the base using two bands.



Packaging secured in place

The Gemini AS is now ready to be transported.

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